THE ENGINEERING AND MINING JOURNAL
AND
COAL

Entered at the Post-Office of New York, N. Y., as Second-Class Matter.

VOL. XLVI. JULY 21. No. 3.

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SUBSCRIPTION PRICE, including postage for the United States, Canada, and Mexico, $4 per annum; $2.25 for six months; all other countries in the Postal Union, $5. Payments must be made in advance.

REMITTANCES should always be made by Bank Drafts, Post-Office Orders, or Express Money Orders on New York, payable to THE SCIENTIFIC PUBLISHING COMPANY.

Advertising Rates.—See page XVI.

THE SCIENTIFIC PUBLISHING CO., Publishers,

P.O. Box 1833. 27 Park Place, New York.

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EDWARD G. RAND.

We regret to have to announce the sudden death, in Australia, of Mr. EDWARD G. RAND, who for some months past has acted as the representative of the ENGINEERING AND MINING JOURNAL in that colony.

Mr. RAND was twenty-nine years old at the time of his death, and was the son of the late Mr. ALBERT T. RAND, formerly President of the Laflin & Rand Powder Company of this city. He was a graduate of Amherst, in the class of '81, and subsequently, after his marriage, he proposed taking a post-graduate course to prepare himself for a professorship in history. Unfortunately, his health failed him, and he had to abandon this plan. With the hope of regaining health he went to Australia, and introduced there the American rock drills and Rackarock powder manufactured by his uncles in this country. He met with great success in his undertaking and quickly built up a large business. At the time of his death he was in the northern part of Australia, 1600 miles from his home in Melbourne, where his wife and two children were living. Mr. RAND was a gentleman of high character, broad culture, great intelligence and high business capacity, and his untimely death has caused sincere regret to all who were acquainted with him.

THE APPROACHING COLLAPSE OF THE PANAMA CANAL COMPANY.

The *Economiste Français* of June 30th, after reviewing the results of the Panama Canal Company's lottery loan, says that after providing the deposit required by law, and repaying the temporary advances the company had received from financial houses, the whole amount received will have been absorbed. "It results from this that the Panama Company can spend no money on its works, but during the next four or five months will have hardly enough to pay interest on its loans and its general expenses. The active career of the Panama Company is ended. It has now only a respite of a few months to prepare for liquidation." . . . . "The Panama Company is in its agony, as all the world knows; it should at least know how to die with a little dignity. Let it return to the subscribers their insufficient funds, and proceed immediately to its liquidation. In any case it must certainly liquidate within six months."

This is the language of the ablest of the French financial papers, and, so far as it relates to the completion of the work, it agrees absolutely with the opinions held by all engineers in this country. We very much doubt if any corporation or syndicate could be organized here to accept the canal with all its appurtenances as a free gift to-day on condition of completing it as even a high-level waterway. Every engineer, and none better than M. DE LESSEPS himself, has long known that the completion of the canal as originally projected can never be accomplished at a figure that would bear any comparison with its commercial value.

That any patriotic Frenchman should have induced the sinking of such vast sums of his countrymen's earnings in so wild and dishonest a scheme, when there is every probability that France will, at no distant day, be called on for the utmost possible sacrifices to preserve its national existence, is as surprising as that an engineer should deliberately misstate facts, and persistently predict the accomplishment of engineering work which he well knew to be a physical impossibility.

GOLD MINING IN THE SOUTH.

It is bad, surely, when a country contains only enough of a thing to be a continual source of diappointment, but it is worse when speculators, seizing upon the worst specimens of mines to be found, palm them off on credulous investors, and thus add reproach to a whole region by the final collapse of these enterprises. Much has been said about the fortunes made in gold mining in the Carolinas "before the war," but the failures of many Northern companies which have operated mines there since the war have not been explained. Many persons are inclined to doubt the historical reports and to think they are all "moonshine." It would indeed be a little difficult to grow enthusiastic about the success of gold mining in those States when the total dividends paid by all their mines within three years have aggregated less than $150,000; but still that does not prove an absence of the precious metal, though it does furnish food for thought to prospective investors in that region. It shows apparently, and other facts tend to confirm it, that it is not a field in which large corporations of capitalists can prosper. A syndicate is usually possessed of vast ideas, and must needs spend money with commensurate lavishness, while the size and leanness of the gold veins and placers thus far worked in the South are adapted only to a very economical plant, free from the luxuriant ideas of a Western bonanza.

Of course exceptions exist, and we shall rejoice in their success when it comes. It is only just to say that the South has suffered by unscrupulous promoters and worthless men professing to be mining experts, and it is also true that, with better management, some languishing enterprises should have paid, and may yet pay, when the cause of failure is removed. We will go even further, and say that there are many gold deposits in the South which, though low-grade, yet compare favorably with those that have paid and are paying in the far West, where wages and other items of cost are much higher. When economical machinery is adopted and fewer untried "processes" and patent "revolutionizing machines" are introduced, a better record will be made. There are so many good "prospects," and the conditions affecting the cost of working are so favorable in the South, that a very great development of the gold mining industry may yet take place. It is, however, none the less true that up to the present time Southern gold mining has been a disappointment to those who have invested in it.

REWARDS TO INVENTIVE AND EFFICIENT WORKMEN.

Mr. J. C. Bayles, President of the Spiral Weld Tube Company, has proposed a scheme for the encouragement of invention and improvement among its employés, of which the following is an outline:

1. Every officer and employé of the company agrees to assign to it absolutely all pertinent improvements which he may invent, provided the company shall take steps within a certain period to secure a patent therefor. Otherwise, the inventor may patent in his own name and take the improvement for himself.

2. Any workman inventing or introducing a new machine or tool, or

improving or adopting an existing one, or devising means for increasing the market, improving the quality or reducing the cost of the company's manufactures, will, upon written notice and after due inquiry and a favorable decision by a standing committee, consisting of the President, the Superintendent and one Director, be rewarded with a sum of from $5 to $50, according to the judgment of the committee, or by a larger lump payment or royalty, if the Board of Directors so decide.

3. Any workman who has thus won five awards, not exceeding $50 in all, will receive a further premium equal to this sum. If the amount is greater than $50, a larger premium will be voted by the Directors.

This plan is modeled after that of the Carron Iron Co., which is said to have worked admirably, calling out many valuable suggestions which would otherwise not have taken definite shape. The business of the Spiral Weld Tube Co., being the manufacture and introduction of a new article, seems to be peculiarly adapted to such an experiment; and, while the proof of the pudding is in the eating, we confess that this pudding presents an appetizing appearance.

Obviously, however, the success of the plan will depend on the way it strikes the workmen, and this in turn will depend on the spirit in which it is administered. As a matter of business necessity, the determination of the awards is left wholly to the representatives of the employer. Without a feeling of confidence toward the employer, therefore, the whole experiment must break down.

But this and other similar devices are timely and useful as affording means for building up such a feeling. They multiply the points of contact between the two parties, and give to a just and kind employer opportunities to express these qualities which the mere payment of wages does not afford. Moreover, this plan emphasizes the element which the wage system is too likely to suppress, namely, the relative value of workmen of the same class. Under the present ordinary organization of labor, one can scarcely make individual distinctions, except by discharging the poorer workmen and keeping those whose brains, skill and fidelity make them more valuable.

This thought suggests that it is well to reward skill and fidelity as well as invention. Not only the workman who improves his tools, but also he who does the most or the best work with the least waste, wear or breakage, is worthy of distinction. The system adopted by the Pennsylvania Railroad Company, which gives premiums to engineers, firemen, etc., is a case in point.

The best plan of this kind will be one in which the premiums are not prizes—that is, the excellence of one man is not defeated of its due reward by the superior merit or luck of another. The determination of a fair standard in each particular; the comparison of workmen, not with one another, but with that standard; and the bestowal of graduated rewards upon that comparison, is the true justice.

THE REPORT OF THE DIRECTOR OF THE MINT.

On another page will be found a summary, from advance proofs, of the report of Dr. J. P. KIMBALL, Director of the Mint, on the production of the precious metals in the United States during the calendar year 1887.

The figure are a little disappointing as regards the production of gold, at least; they are, in fact, practically the figures given by Mr. J. J. VALENTINE, and published in the ENGINEERING AND MINING JOURNAL, January 21st, last, only that Mr. VALENTINE'S figures were for the States and Territories west of the Missouri River, while Dr. KIMBALL'S figures include the production of the east also.

We have not the means available to check the figures of North Carolina, given at $225,000 gold, and South Carolina, $50,000 gold; but it is very evident that the item of $3,000 gold and $2,500 silver for Alabama, Tennessee, Virginia, Vermont, Michigan, and Wyoming is wildly inaccurate.

The production of a single mine in Michigan, the Ropes, was in 1887 about $33,000 gold and $2600 silver, or, say, ten times as much as the mint report credits to these six States.

These figures of Michigan production have been widely published, and as they were almost the same in the preceding year, such a mistake indicates a great degree of carelessness on the part of some one.

It is to be hoped that this is not a fair measure of the value of the statistics of other parts of the report.

The collection of statistics of production should not be made any part of the duties of the Director of the Mint, and especially as there is already a Department of Mineral Statistics attached to the Geological Survey, which should properly be intrusted with the collection of gold and silver returns, as well as the lead, copper, nickel, and other metals and minerals. It is true that the appropriation for the collection of mineral statistics is absurdly inadequate—niggardly, in fact—but if to it be added the expenditure (about $2,300) of the Director of the Mint for the collection of the gold and silver statistics, the work could be more efficiently performed than is possible with two separate staffs, each inadequately remunerated. Moreover, the Mint reports would be all the more valuable from receiving the undivided attention of the present able director. It is to be hoped that this change will be made in the next report.

The production of gold and silver is given in both ounces and values as follows: gold, 1,596,500 ounces, or $33,093,000; silver, 41,269,240 ounces, or $40,450,000, commercial value, the average value of silver during the year having been about 98 cents per ounce.

The efforts, referred to in the abstract, to ascertain the cost per ounce of producing gold and silver in the United States must attain results more curious than useful. Over a series of years the average cost of producing the precious metals is a little less than the market prices of the metals, else no new capital would go into the business; and the profits on production are unfortunately (from many and chiefly avoidable causes) not so great as to make capital very eager to engage in mining.

The wide variations in the cost of production between one mine and another, and between different periods at the same mine, are so great that no statistics of any value can be obtained from individual cases. It is probable that the average cost of all the gold and silver produced will not vary very greatly from $18 per fine ounce for gold and 80 to 90 cents per ounce for silver. In this latter the fluctuating value of lead would make a close estimate of cost impossible for silver coming from silver-lead bullion.

COST OF IRON MAKING AT SHEFFIELD, ALA.

Since we indulged ourselves, the other day, in a little innocent fun over the absurdity of certain alleged remarks of Mr. E. C. PECHIN, concerning the pigs and slags of Sheffield, Ala., it is only fair that we should notice the serious and sensible expression of his views, given in the Cleveland, O., *Iron Trade Review*, to which he is a special contributor. No such special cause, however, would be necessary to direct our attention to the intelligent and judicious accounts of the new Southern iron-regions, given by this keen observer. It is refreshing, as well as useful, to read the report of a critic both competent and disinterested, As MARK TWAIN said of the person with a hare-lip who never told a lie, "such men are all too rare."

Mr. PECHIN selects as the three most important points, at present, in the Alabama coal and iron region, Birmingham, Anniston and Sheffield, and devotes his first article to Sheffield. We attempt a condensed summary of his review, and in another number will give his views on Anniston and Birmingham.

1. Sheffield has a fine natural site on the Tennessee, with railroad connections to Chattanooga (165 miles), Memphis (145 miles), and Birmingham (126 miles); and will have connections shortly to Louisville (312 miles) and Cincinnati (412 miles). Begun in 1883, it has already 3000 to 4000 inhabitants, and a number of manufactories, banks, street railways, water-works, electric light, good hotels, etc., besides the five large blast-furnaces of modern type, on the expected productiveness of which the large outlay in other improvements seems to have been made.

2. The blast-furnaces are admirably located and arranged. Only one is now complete and in blast. The ores are exclusively brown hematites, from Franklin County, Ala., about 28 miles south, and Lawrence County, Tenn., about as far north. They contain, as delivered at the furnace, 47 to 50 per cent of iron, a little over 0·5 phosphorus, about 3·5 alumina, about 11 water, and 11 to 15 silica; cost $1.40 per ton on cars, or $1.65 at furnace. Limestone, containing 97 to 98 per cent of carbonate of lime, less than 0·5 silica and 0·02 to 0·04 phosphorus, is delivered at 75 cents per ton. Coke is now brought from the Flat Top, Va., field, but is expected to come from the Warrior field. Mr. PECHIN estimates that it will cost $2.70 per ton at the furnaces, if made, as now intended by the proprietors of some of the Sheffield furnaces, at Jasper, from coal mined about 15 miles from that point. Though Mr. PECHIN does not raise the question, we learn from other sources that there is as yet no certainty that the Jasper coals will make a furnace coke.

3. Mr. PECHIN'S estimate of the cost of pig-iron at Sheffield is as follows:

1½ tons of coke at $2.70	$4.05
2¼ " ore " 1.65	3.71
¾ " limestone at .80	.60
Labor, $2; repairs, .50; supplies, .10; sand, .06; general expenses, .25; total	2.91
Grand total per ton	$11.27

He adds that "Birmingham and some other inland points have somewhat cheaper raw materials, and can make pig-iron at a somewhat lower first cost; but a portion of this is compensated for by Sheffield's closer proximity to the great markets of the West, and lower rates to reach them"; and emphasizes the convenience of Sheffield as a distributing point, and hence as a location for manufactures employing pig-iron as a raw material.

Several things are indicated by this careful but not unfriendly review. It is clear, in the first place, that Sheffield affords another instance of

the general Southern practice of erecting blast-furnaces before the supply of ores and fuel—particularly fuel—has been secured. To the purely metallurgical observer this may seem to be inexplicable folly. But the explanation lies in the ownership of lands by the builders of the furnaces, and in the not infrequent recovery of the entire cost of expensive works, even before they have been finished, from the sale of town-lots at enhanced prices. We have heard of costly blast-furnace plants erected as parts of land-speculations of this kind, which may never run at all, and certainly could not run profitably in the face of the sharp competition and low market-prices which now impend.

The Sheffield furnace mentioned by Mr. PECHIN as bringing its coke from Virginia, cannot be earning any money, however good the quality of its iron. For the cost of Pocahontas or New River coke at Sheffield cannot be less than $5.50 per ton. Assuming that by reason of the superior character of this coke, 1¼ tons of it would make a ton of pig (which is about the best average practice on similar ores in Virginia), we have $6.88 as the fuel cost at Sheffield; and, substituting this figure in Mr. PECHIN'S estimate, we obtain $14.10 at the cost per ton of pig-iron. We may add that we think Mr. PECHIN'S estimate more favorable than average practice will be likely to show. At any rate, even if the item of "repairs" is intended to cover the necessary fund for relining and renewals, the estimate evidently does not provide for interest on fixed and floating capital, which would add in practice from 50 cents to $1 to the cost of iron per ton.

We had occasion recently to examine the books of a large concern operating a successful modern blast-furnace plant. The analysis covered a period of twelve years, including high and low markets, accidents, bad debts, etc. During the whole period, monthly estimates of the cost of iron had been carefully made from actual experience, including liberal allowances for waste of fuel, etc., and a special allowance of 50 cents per ton for the renewal-fund. The result of the comparison of these figures with the net result of the business showed that the actual cost of the iron produced (including 6 per cent interest on the capital) was $2 per ton more than the cost as shown by the monthly estimates. This extra expense consisted entirely of items not included in the cost-sheets. We think it safe to say that any large blast-furnace concern which is not receiving at the furnace $2 per ton more than its current cost is not earning interest. Such is the difference between metallurgy and business.

But to return to Sheffield. The impression produced upon us by Mr. PECHIN'S account is that this place has an even chance with two or three other towns on the Tennessee: that it enjoys no relative or absolute monopoly of natural advantages; that in the fierce competition of the pig-iron manufacture it is at a certain disadvantage in the cost of raw material; that this is not going to be counterbalanced by the cheaper rates to market which it may be able to secure (the total rate from Birmingham, Ala., to Cleveland, Ohio, is now only $4.35 per ton); that the net drawbacks will not be greater, however, than the difference between average management and the best management: in short, that Sheffield has no cause, either to hurrah or to despair.

CORRESPONDENCE.

We invite correspondence upon matters of interest to the industries of mining and metallurgy. Communications should invariably be accompanied with the name and address of the writer. Initials only will be published when so requested.
All letters should be addressed to the MANAGING EDITOR.
We do not hold ourselves responsible for the opinions expressed by correspondents

Investigate Men as well as Mines before Buying.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: Your recent action in so thoroughly exposing the Alaska bubbles commands the gratitude of all honest mining men. It is these sharks and pariahs of mining that disgrace a business which in the benefits it confers upon a country, certainly ranks in the first order; and for the sake of the industry the apparent ease with which such swindles are perpetrated is greatly to be regretted.

In mercantile affairs people are cautious to ascertain the standing and trustworthiness of those with whom they enter into business relations; but in mining, unfortunately, swindling scamps, who know nothing whatever of the business in which they pretend to be experts, or worse yet, are dishonest and untrustworthy, can, by creating imaginary veins of untold wealth in some deserving district, delude unsuspecting people into parting with their money. I know a man here who for years has lived in ease, by scattering over the country flaring letters and highly spiced circulars, but who has never done a cent's worth of honest mining, and whose nefarious schemes a whisper of inquiry would expose in all their naked deception. Upright men deplore this condition of things; but since this individual seldom goes beyond obtaining what advances he can by contracting his so-called mines to some unwary people, who when they find how badly they have been deceived are glad to hide their folly in silence, he is able to carry on his operations with comparative impunity. His name might be given, but since he has so many aliases the only safety for the public is for them to assure themselves of the trustworthiness of those with whom they deal, and this advice is equally good for all other countries and districts.

Yours, etc., LEE, BIRCH & O'DONNELL.

ZACATECAS, Mexico, July 13, 1888.

PRECIOUS METAL PRODUCTION AND USE IN THE UNITED STATES, 1887.

The Director of the Mint has submitted to Congress a report on the "Production of the Precious Metals in the United States during the Calendar Year 1887." The product of gold amounted to 1,596,500 fine ounces, of the value of $33,000,000. The product of silver amounted to 41,269,240 fine ounces, of commercial value about $40,450,000, and of the coining value of $53,357,000. The gold product fell off from that of the preceding year, when it was $35,000,000. The product of silver increased over that of the preceding year, when at coining value it was $51,000,000. The product was contributed by states and territories as follows, in coining values:

State or territory.	Gold.	Silver.	Total.
Alaska	$675,000	$300	$675,300
Arizona	830,000	3,800,000	4,630,000
California	13,400,000	1,500,000	14,900,000
Colorado	4,000,000	15,000,000	19,000,000
Dakota	2,400,000	40,000	2,440,000
Georgia	110,000	500	110,500
Idaho	1,900,000	3,000,000	4,900,000
Montana	5,230,000	15,500,000	20,730,000
Nevada	2,500,000	4,900,000	7,400,000
New Mexico	500,000	2,300,000	2,800,000
North Carolina	225,000	5,000	230,000
Oregon	900,000	10,000	910,000
South Carolina	50,000	500	50,500
Utah	220,000	7,000,000	7,220,000
Washington	150,000	100,000	250,000
Texas		250,000	250,000
Alabama, Tennessee, Virginia, Vermont, Michigan and Wyoming	3,000	2,500	5,500
Total	33,093,000	53,408,800	86,501,800

The value of the gold deposited at the mints was $84,667,712, of which $32,444,067 was of domestic production, and $39,092,051 consisted of foreign gold bullion and coin imported into the United States.

The deposits and purchases of silver at the Mints amounted, at coining rate, to $46,947,792.

The imports of gold into the United States during the year were: Gold bullion (principally foreign), $19,524,641; gold coin (foreign), $19,652,042; gold coin (United States), $5,712,616.

The imports of silver were: Silver bullion, $5,373,001; silver coin (foreign), $10,197,139; trade dollars, $831,176; subsidiary silver coin, $371,298.

Nearly all of the silver bullion imported was from Mexico, and nearly all of the silver coin consisted of Mexican dollars.

Silver ores were also imported, principally from Mexico, of the value of $4,242,135.

The exports of bullion and coin from the United States consisted of: Gold bullion, $1,085,892; foreign gold coin, $4,048,991; United States gold coin, $4,005,659; and of silver: Domestic bullion (at its commercial value), $19,671,571; foreign silver coin (principally to China), $7,894,041; subsidiary coin, $47,396.

There was a gain in gold to the United States by imports over exports of $35,671,297, and a loss of silver by exports of $7,159,667—a net gain to this country of bullion and coin of $28,511,630.

The coinage of the mints during the calendar year was as follows:

Coins.	Pieces.	Value.
Gold	3,086,873	$23,972,383.00
Silver dollars	33,611,710	34,611,710.00
Subsidiary silver	15,754,809	1,579,371.40
Minor	60,498,096	1,215,686.26
Total	112,951,488	$60,379,150.66

In addition to the coinage, bars of gold and silver were manufactured of the value of, gold, $58,704,956; silver, $6,633,639; total, $65,338,595.

The director estimates the total metallic stock in the United States on the 1st of June, 1888, to have been: Gold coin, $592,129,702; gold bullion in the mints, $114,710,817: total gold, $706,840,519; silver dollars, $297,099,790; subsidiary coin, $76,400,842; silver bullion in the mints, $10,154,905; total silver, $383,655,537; total gold and silver, $1,090,496,056.

An inquiry as to the value of the gold and silver used in the industrial arts in the United States during the year 1887 shows a consumption of gold of $11,672,606, and of silver, $5,241,998; total, $16,914,604. Including the melting down of United States gold coin, the director estimates the value of the gold used in the United States in the industrial arts during 1887 at about $14,600,000, and of silver, $5,280,000. This is an increase over the consumption of prior years.

The price of silver varied considerably during the year, the highest price being 47⅛ pence per ounce (British standard), and the lowest 43¼ pence. The average price of silver was about 98 cents per fine ounce.

The amount of silver purchased for the silver dollar coinage was 24,797,279 fine ounces, costing $24,221,257, the average cost to the government being $0·9768 per ounce fine.

Reports of the coinages executed by the mints of the world show that the coinage of the world during the calendars years 1884, 1885, 1886 and 1887 was as follows:

Calendar years.	Gold.	Silver.
1884	$99,432,795	$95,832,084
1885	95,712,008	105,324,736
1886	94,642,070	124,706,065
1887	124,998,797	133,502,066

This includes recoinages, which were not less in value than $10,000,000 in gold and $15,000,000 in silver in 1886. In addition to the large coinage of silver dollars by the United States, a very large coinage of full legal tender silver coins was executed at the mints of Mexico, India and Japan, and some at the Austrian mints.

The reported consumption of gold in the industrial arts in the world was in 1886, approximately: Gold, $46,000,000; silver, $22,000,000.

The production of gold and silver in the world was as follows:

Calendar years.	Gold. Kilograms.	Gold. Value. Dollars.	Silver. Kilograms.	Silver. Value. Dollars.
1883	143,533	95,392,000	2,774,227	115,297,000
1884	153,017	101,694,000	2,665,386	110,773,000
1885	155,891	103,603,000	2,954,766	122,799,800
1886	148,625	98,764,235	3,037,319	126,457,500

Special efforts have been made this year for the first time to ascertain, approximately, the cost per ounce of producing gold and silver in the United States, especially silver. The result of this inquiry will be presented in the report. The report will be issued in the month of October.

ASPEN MOUNTAIN: ITS ORES AND THEIR MODE OF OCCURRENCE.

Written for the Engineering and Mining Journal by D. W. Brunton, M.E.

(*Concluded from page 23.*)

GEOLOGY.

Throughout this entire region the amount of erosion has been very great, and in this particular section all of the sedimentary rocks still remaining occupy a long narrow syncline, where they have been protected from erosion by the mass of hard unyielding granite on either side of them.

A geological section taken near the center of the syncline where the erosion is least would show the following succession of rocks, beginning at the surface:

Soil and wash	0 to 40 feet	
Gray limestone	10 " 160 "	Middle Carboniferous.
Quartz porphyry (intrusive)	0 " 400 "	
Shales and black limestones	50 " 450 "	Middle Carboniferous.
Blue limestone	about 100 feet	Lower Carboniferous.
Brown limestone	" 225 "	Lower Carboniferous.
Red granular quartzite	9 "	"Parting quartzite," Silurian.
Silicious dolomite	15 "	"Parting quartzite," Silurian.
White compact quartzite	6 "	"Parting quartzite," Silurian.
Lithographic stone	2½ feet	
White limestone	430 "	Silurian.
Quartzite	400 "	Cambrian.
Metamorphic granite		Archean.

DESCRIPTION OF THE DIFFERENT STRATA.

The metamorphic granite which underlies the sedimentary rocks and forms the Saguache range of mountains is a firm, compact, but rather coarse grained rock of a gray or reddish-gray color. In the walls of the Roaring Fork Cañon, where there are continuous rock exposures for miles, places are quite frequent where the granite has a foliated structure somewhat resembling gneiss.

The Cambrian quartzites are very close grained, hard and white, though sometimes stained red by oxide of iron. Throughout the Cambrian quartzites there are many narrow bands of siliceous dolomite, upon some of which considerable prospecting has been done, without any marked success. In the Princess Louise mine, where the ore occurs in a nearly vertical fault traversing the quartzite, these bands of dolomite sometimes carry mineral for a considerable distance from the main fault.

The Silurian rocks in Aspen Mountain consist of a yellowish-colored siliceous dolomitic limestone, overlaid by bands of quartzite, separating them from the Middle Carboniferous limestones above. As a rule, the Silurian limestones are exceedingly hard and compact, very thinly bedded, and carrying near the bottom of the series a considerable amount of chert. Between the white limestone and the "parting quartzite" there is a thin stratum of drab-colored, even-grained, compact limestone, known as lithographic stone, although it probably is not sufficiently fine grained to possess any commercial value. The white quartzite overlying this has an average thickness of about 6 feet, and is remarkably uniform in thickness, texture, and color throughout the mountain. The fifteen feet of dolomite overlying it does not differ materially from the white limestone below. Above this dolomite is a layer of red-colored granular quartzite, having a thickness of from 8 to 9 feet. The grains of sand forming this quartzite are so large that their rounded form can be plainly seen with the naked eye, and in some places upon weathered surfaces these rounded grains are so large that they might be correctly called small quartz pebbles, and the bed designated a very fine conglomerate. These two narrow bands of quartzite and the accompanying stratum of lithographic stone form together a series of rocks, not repeated stratigraphically, and it was by stripping and surveying this belt that the first accurate knowledge of the folds and faults of Aspen Mountain was obtained. Although the two limestones forming the Lower Carboniferous strata differ materially in color, composition and texture, there is, as we will see shortly, abundant evidence to prove that they are not only of the same geological age, but that they were originally deposited as one and the same rock. The division between the Lower and Middle Carboniferous rocks is very clear and sharp, the transition from hard blue limestone to soft black shale usually occurring in two or three feet. Interbedded in the shales of the Middle Carboniferous occur thick strata of hard black limestones, usually thickly studded with crystals of pyrite. There is a great apparent difference in the thickness of the Middle Carboniferous strata upon Aspen Mountain, but a close examination shows that this difference is more apparent than real.

The intrusive porphyry which now covers so large an area upon the surface as to be spoken of by the miners as "overflow porphyry," is really an immense sheet from which the overlying strata have been eroded away to a sufficient depth to expose the upper surface of the porphyry. Now, if we suppose that this intrusive mass, instead of intruding itself along one certain bedding plane of the Middle Carboniferous, should have cut diagonally across the strata, we would have a ready and probably a true explanation of why the Middle Carboniferous rocks still remaining on Aspen Mountain are so much thicker at one point than at another. Considering the extremely precipitous nature of Aspen Mountain, the depth of soil and wash by which it is covered is somewhat remarkable, except on sheer cliffs and slopes steeper than 30 degrees rocks in place are rarely exposed. Where the porphyry nears or cuts down into the blue limestone, its heat has completely marbleized the latter. Beautiful examples of this metamorphosis may be seen in the Bonnybel and Little Giant cliffs.

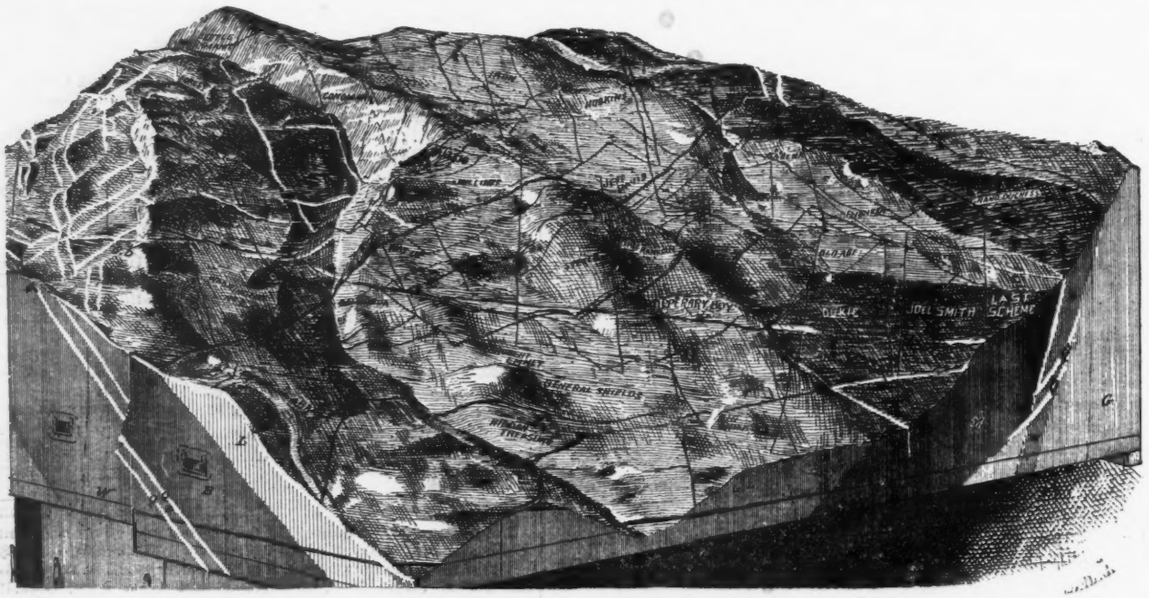


FIG. 1.—MODEL OF ASPEN MOUNTAIN.

KEY.

G. Metamorphic granite.	*Q. Parting quartzites.*	*L. Blue limestone.*	*P. Porphyry.*
C. Cambrian quartzite.	*D. Dolomite.*	*M. Middle carboniferous.*	*G L. Gray limestone.*
W. White limestone.	*B. Brown limestone.*	*F. Faults.*	*O. Ore.*

DOLOMITIZATION.

The 100 feet of blue limestone is not one solid mass, but is traversed by from five to seven strata of brown lime varying in thickness from 1½ to 8 feet. Neither is the main body of underlying brown limestone one solid mass of that material, as it contains three or four interrupted strata of siliceous blue limestones, as well as numerous lenticular masses, or what are presumably unaltered "cores" of blue. These masses of blue are also very common in the underground workings and in places which have been closely studied, as, for instance, the Durant incline and the Visino upraise, their size, shape, and position have been accurately noted. In all of these places it is plainly evident that these intercalated masses of blue could neither have been formed in their present position by stratification, nor crowded there by faulting or dislocation. In many places, notably in Durant pits 3 and 5, particular strata of blue lime change into brown in a distance of three or four feet. To suppose that such diverse conditions as are necessary for the deposition of limestone and dolomite could have existed within four feet of each other in the bed of the ocean would be a manifest absurdity. In Durant pit 16 a vertical face of blue is traversed by a nearly horizontal stratum of brown about 8 inches in thickness; cutting vertically down the face of the cut, and intersecting the horizontal stratum at right angles, is a second stratum of brown limestone. That both of these strata could have been deposited stratigraphically would be a physical impossibility. In view of such facts it is plain that the entire mass of Lower Carboniferous limestone must have been deposited as blue limestone, a part of which has since been altered by dolomitization into brown. This process is so fully discussed and described in every work on chemical geology that it would be a useless waste of

space to go into its details here. Wherever the dolomitization has stopped at a bedding plane the blue and the brown can be separated from each other by cleavage, but where as it usually happens dolomitizing ceases midway between two bedding planes, the blue limestone shades so gradually into brown that it is impossible to tell where the one begins and the other ends.

In the alteration of limestone into dolomite the shrinkage in volume is 12·1 per cent., a change which necessarily allows the joints and bedding planes to open, causing the dolomite to separate readily into rhombohedral or lozenge shaped pieces. This property has not escaped the notice of the miners, who, with their usual aptness in nomenclature, have called it "short lime." The brown lime strata, inclosed in the blue, do not differ chemically or physically from the main body of brown below, and are undoubtedly formed by the dolomitization of what were originally softer or more permeable strata in the blue. Characteristic fossils may be found in both blue and brown lime, but in the latter are usually so fragile that it is almost impossible to preserve them.

ORIGIN OF BLUE LIME CLIFFS.

In the process of dolomitization there seems to be a complete rearrangement of the crystalline particles. When a piece of limestone is split the cleavage seems to take place along the faces of the crystals, while a piece of dolomite treated in the same manner exposes the points instead of the sides of these crystals, and probably for this reason the latter is softer and more easily broken than the former. This peculiarity, together with its open joints and cleavage planes, causes the brown limestone to weather much more rapidly than the blue, producing the result which always follows where a soft easily eroded rock is overlain by harder and more durable strata, viz.: the formation of steep cliffs wherever the basset edges of the limestones are exposed. These are to be found on both sides of the fold wherever the blue limestone overlies the brown and as the dip slopes on both East and West Aspen Mt. pitch toward the axis of the syncline, while the bold escarpments face in the opposite direction, they may be taken as indirect but convincing proof of the synclinal structure of Aspen Mountain.

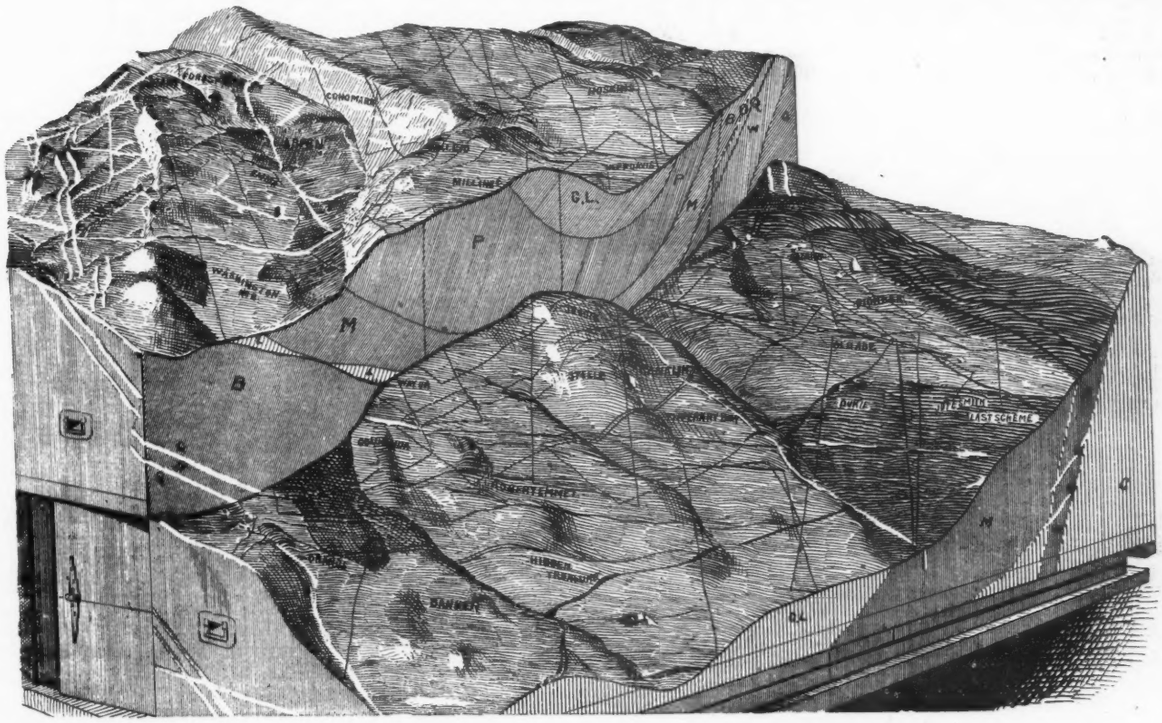


FIG. 2.—MODEL OF ASPEN MOUNTAIN—SHOWING FAULT.

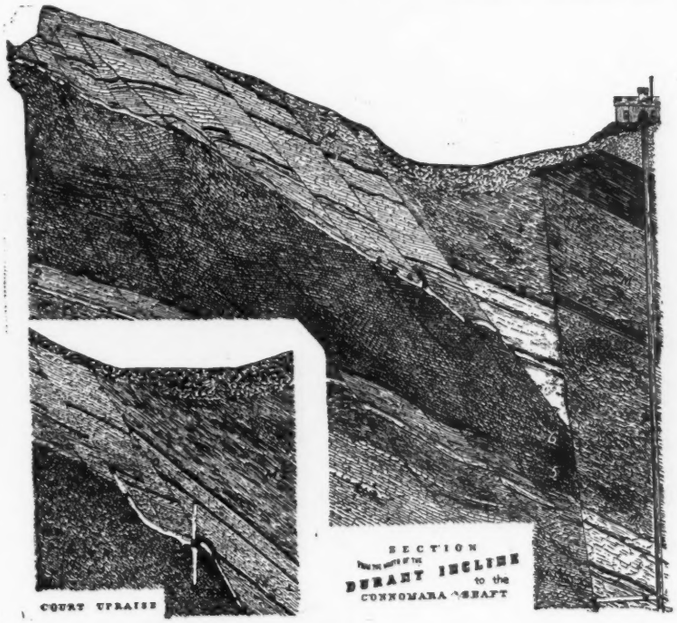


FIG. 3.

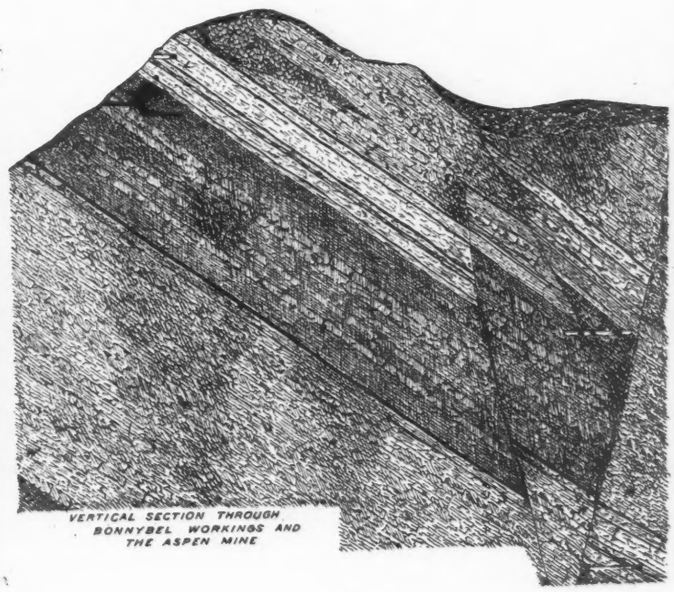


FIG. 4.

DIFFERENCE BETWEEN FAULTED AND STRATIFIED CONTACT.

In this investigation the word contact is used in its ordinary dictionary sense, and denotes the junction or point where two dissimilar rocks touch each other—not the sheet of iron stained ore-bearing material sometimes found between porphyry and limestone which Leadville miners designate contact, and which, so far as known, does not exist on Aspen Mountain.

Figure 8 represents an ideal vertical section through Spar Ridge, and

shows the different rocks in their relative positions, and upon the pitch disclosed in many of the most important workings upon the hill. In the sense in which the word contact will be used, there is absolutely no difference between the contact of the brown limestone with the quartzite below it or with the blue limestone above it; nor does it differ in any respect from the contact of the blue with the brown in the five brown lime bands shown in the section. By looking at the cut it will be seen that there are two entirely distinct contacts between the main body of blue and the main body of brown, viz., the stratified contact extending from 1 to 2 and from 3 to 4, and the faulted contact of the blue and brown between 2 and 3 produced by the downthrow of the fault *FF*. Where the bedding planes of the limestone are partially obliterated by heat and pressure, it is sometimes exceedingly difficult to distinguish between the stratified and the faulted contact when the fault-throw has been in the usual direction. This, however, is only true when the investigation is confined to a given spot; for if a contact be followed, the line of division, no matter how close it may be, will not continue along between a blue lime roof and a brown lime floor as a stratified contact would, but will pass upwards into the blue limestone, as between 2 and *F*, and downwards wholly into the brown, as between 3 and *F*. Where the fault has a reverse throw, as shown in Fig. 9, the reduplication of strata, and the fact that between 2 and 3 the brown limestone overlies the blue renders its identification extremely easy. In addition to all of this, the pitch of the fault planes ranges from 65 degrees to 70 degrees, while the pitch of the strata is seldom as high as 40 degrees and never exceeds 44 degrees.

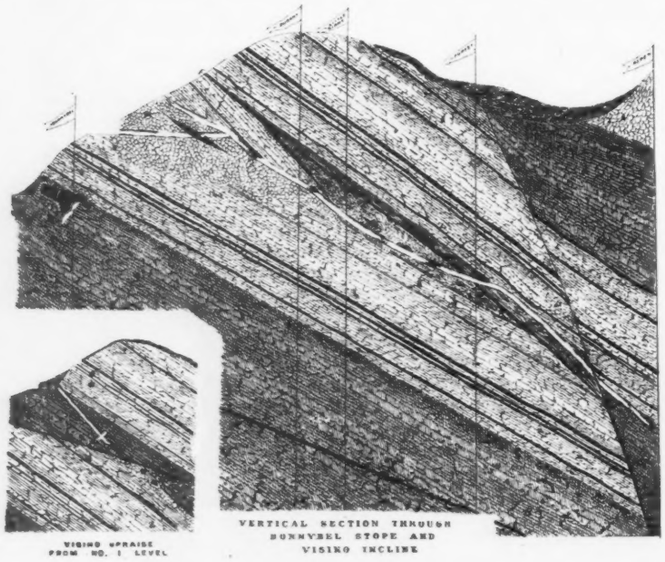


FIG. 5.

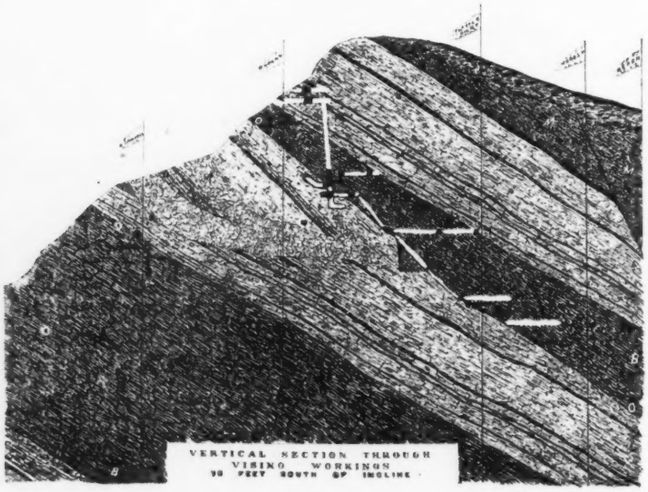


FIG. 6.

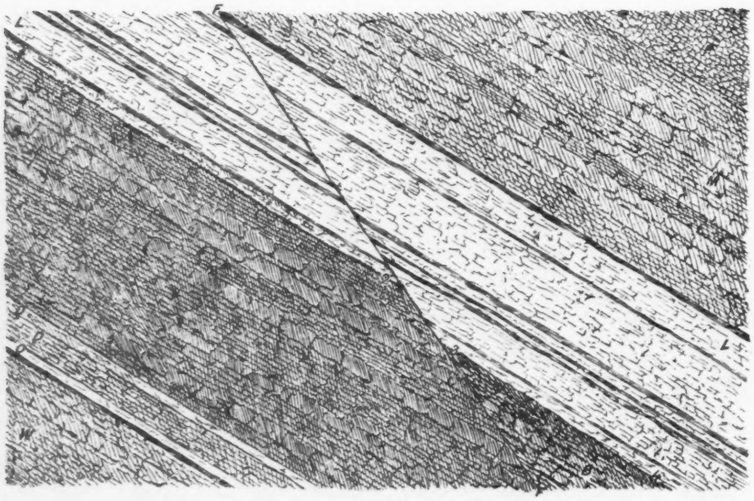


FIG. 8.

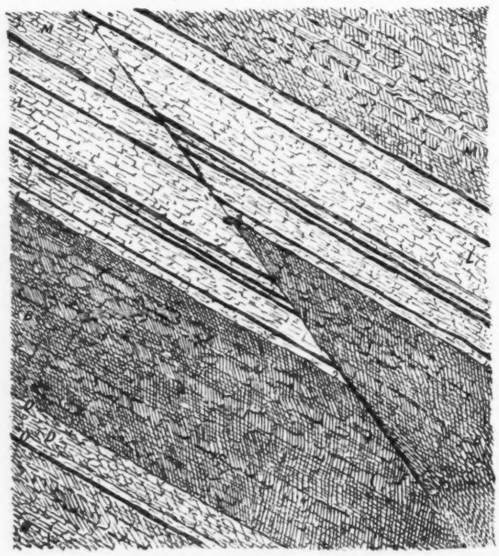


FIG. 9.

STRATIFIED STRUCTURE.

Whenever mud and sand are carried into a pool of water, either upon the surface or underground, the coarser material settles to the bottom first, and the finest last, with a regular gradation of particles between. After this operation has been repeated a number of times and the resultant sediment dried and hardened, a section through the mass would show alternating layers of coarse and fine material exactly resembling the filling of many faults and caves in Aspen Mountain. By some this stratified arrangement has been mistaken for a banded structure, but the difference between alternating layers of water-sorted sand and mud, and the ribbon-like arrangement of crystals designated banded structure, is so great that the error is inexcusable. As a rule this stratified material in Aspen Mountain is so soft that it may be cut with a shovel, and great difficulty is found in obtaining specimens sufficiently hardened to bear handling. In most if not all cases no difficulty need be experienced in determining the nature of the deposit, as the lower edge of each layer is usually composed of coarse rounded particles, and the gradation from coarse to fine can be plainly seen with the naked eye.

THE ORES.

The ores of Aspen Mountain differ greatly in appearance, composition and assay, and as a rule their value can not be estimated with any accuracy by inspection. The most common ore is a more or less disintegrated limestone or dolomite, heavily stained by oxides of iron and manganese, intermixed with crystals of calcite or baryte. In the Washington, Emma, Vallejo and Bonnybel the ores are, as a rule, brown limestone slightly stained with oxide of iron and carbonate of copper, and carrying from 20 to 200 ounces of silver per ton.

Galena is very common in many of the mines, notably the Aspen and Vallejo. The most interesting ore in the district comes from the Aspen mine, and is structurally and chemically a blue limestone. Specimens may readily be obtained which, while containing 95 per cent of $CaCO_3$, will assay hundreds of ounces in silver. Fossils are quite plentiful in this blue limestone and it is no uncommon thing to find pieces of rock showing fossils completely encased in ore. Last year a beautiful specimen was found, showing a fossil almost entirely encased in native silver.

The typical limestones which assay high in silver are usually rather coarse grained, and small specks of mineral (argentite and polybasite) can be plainly seen with a glass. This, however, is not always the case, and it was recently proven that a trained observer could not distinguish between 702-ounce ore and barren limestone. Among the miners "copper stain" is usually considered a very certain indication that the rock, be it brown limestone, blue limestone, baryte, or calcite will assay well in silver. As a rule this is true, although there are places where all signs fail, and material which judging from appearances should assay 500 ounces will not assay 5 ounces.

It is a somewhat singular fact that disintegrated ores containing grains of quartz or siliceous limestones, assay much less than those which are free from these substances. Of two ores from the same stope, exactly alike in color and appearance, the one soft and velvety to the touch and the other containing granular particles, the former will probably assay ten times as much as the latter.

MODE OF OCCURRENCE.

What is popularly known as the Aspen mineral belt may be geologically described as the lower carboniferous limestones which are now being worked along their outcrops on both sides of the syncline, and which carry silver and lead in greater or lesser quantities from the "parting quartzites" to the shale. Until recently the bulk of the ore mined in Aspen was taken from a continuous chute passing through the Spar, Washington, Emma, and Aspen mines. When these properties became involved and tied up in litigation many thought that for a time at least the fate of the district was sealed. Energetic prospecting, however, soon developed the fact that these mines were not Aspen, any more than the Chrysolite and Little Pittsburg had been Leadville, and to-day Smuggler Mountain rivals Aspen Mountain in the amount of its output, and mines more than two miles south of the Spar and Washington are shipping heavily.

In the upheaval and folding of the strata composing the mountain numerous faults were formed which afforded a passage for the mineral bearing solutions from whatever source they came, thus giving them free access to the entire body of limestone, and allowing the mineral to be deposited wherever the conditions were most favorable. Whether the immense body of intrusive porpyhry overlying the Lower Carboniferous limestones and often sending narrow tongues down into them, furnished directly the metallic contents of the ore, or whether this mass only furnished the heat necessary to render the subterranean waters actively solvent, is a much disputed question. The soft putty-like shales of the Middle Carboniferous would immediately close over any fault which might extend through them, thus effectually barring the passage of mineral bearing solutions and preventing mineralization. The Silurian limestones contain a much greater proportion of silica than those of the lower carboniferous, and have perhaps for this reason afforded less favorable conditions for the deposition of ore. Be this as it may, the mineralization, except in a few isolated instances, has been wholly confined to the Lower Carboniferous strata. As this belt has an average thickness of 325 feet, and is more or less mineralized throughout its entire extent, a study of the principal ore-chutes and the manner of their deposition will not only prove interesting, but will have an economic value. It has been claimed by some that the ores have been deposited along the line of junction between the main body of brown and the first stratum of blue lime overlying it. There is, however, nothing in either theory or fact to justify this assumption. If the contact of blue lime with the brown formed the conditions necessary for the deposition of ore, then we should find ore at each one of the overlying contacts between the blue and the brown, whereas, in point of fact, there is no more ore in the bedding planes between the blue and brown limestones than in the bedding planes of the blue and brown limestones themselves.

DETAILED DESCRIPTION OF ORE-BODIES.

The great ore chute already referred to as passing through the Spar, Washington, Vallejo, Emma and Aspen occurs along a line of parallel strike faults whose relative position to each other will be readily understood by reference to Fig. 3, where they are marked 5, 6 and 7. In and along the line of these faults the ores are found, sometimes as a disintegrated iron-stained limestone, intermixed with calcite and baryte, carrying from 10 per cent to 25 per cent of lead and from 20 to 200 ounces in silver, but more generally as an impregnation extending for an indefinite distance into the limestones on both sides of the faults. As these faults pitch at an angle of from 65 to 70 degrees, while the strata themselves only dip at an angle of from 36 to 44 degrees, it follows that these faults must cut diagonally through all of the strata in the hill, and that an ore-body lying in and along these faults must first pass through the brown limestones, then through the faulted contact between blue and brown, and thence upward into the blue limestone. Now this is exactly what we find in the underground developments of East Aspen Mountain. The ores of the Washington and Emma lie at or near these faults wholly in the brown limestone, while as we follow the chute southward in its course until we reach the compromise line between the Emma and Aspen, where the ores pass through the faulted contact up into the blue limestone above where there are splendid ore-bodies, one of which has been explored to the lower edge of the Middle Carboniferous shales. At the mouth of the Spar discovery tunnel what is known as the Emma No. 6 fault (*SD* in Fig. 1) is so plainly marked that it has been reported upon and described as a fissure vein. The course of this fault is marked by a faint line running diagonally across the back of Spar Ridge, and can be continuously traced both upon the surface and in the underground workings as far as the center of the Aspen claim. A close inspection of Fig. 1 shows that this fault cuts diagonally across the brown limestone, narrowing it down to less than two thirds its real thickness; a condition that proves conclusively that from the first bend in the trail to the Spar discovery tunnel the blue and brown limestones come together at a faulted and not a stratified contact. The Durant incline has been driven for 571 feet approximately along the line of stratified contact between the blue and the brown limestones. For a portion of the way the two limestones shade from one into the other imperceptibly, and are not separated by even a bedding plane. Near the surface, and at a few points in the incline where it is crossed by faults, assays may be obtained, but as for the greater part of the distance, it would probably be extremely difficult to find so long a stretch of absolutely barren ground any where else in the Lower Carboniferous strata. In one place, for a distance of 105 feet, most carefully-selected samples, taken at 5 foot intervals, failed to show even a trace of mineral. In many other places on the hill, notably in the Durant open pits, and in the Visino and Little Giant workings, the stratified contact has been thoroughly exposed, and, as a rule, is absolutely barren. Thus we see that some condition other than that of stratified contact between brown and blue limestone must be looked for as the immediate cause of large deposits of ore. At the lower end of the Durant incline; 571 feet from its mouth, the incline meets the Emma discovery fault. At this point, the pitch of the incline is 34 degrees, while that of the Emma discovery fault and stope is 65 degrees. The stope at this point is 50 or 60 feet in length, and has been carried 30 feet above the incline, with 2½ feet of good ore still in sight, and above this point an upraise has been continued in ore to the surface. In Fig. 5, the ores in the Bonnybel workings are wholly in the brown limestones. In the Aspen workings, shown near the middle of the right-hand side of the figure, ore is found at the faulted contact at 9, and not in the stratified contact at 10. In the workings at the lower right-hand corner, the ores occur in quantity only near the great Connemara fault, which has a vertical displacement of over 400 feet.

In Fig. 5 the effect of the Chloride reverse fault is plainly seen in the reduplication of the blue limestone strata. In the Visino tunnel and incline ore is not met with until after its intersection with the Chloride fault (*FF*) 26 feet below the sixth level. In the section through the "Visino upraise from No. 1 level," shown in the lower left-hand corner of Fig. 5, the stratified contact exposed at the mouth of the upraise is absolutely barren, and no ore is met with until the Chloride fault (*OO*) is reached at the bottom of the Court winze, where it occurs between a brown lime roof and a blue lime floor. No better opportunity to study the mode of occurrence of the Aspen ore-bodies can be found than that which is afforded by the section shown in Fig. 6. Here the Chloride fault (*OO*) still reduplicates the blue lime strata, the lower division of which is known as the Bonnybel blue limestone, and the upper as the Little Giant blue limestone. At this point the Chloride fault is thoroughly explored by the Little Giant winze and drifts, and the six south levels from the Visino incline, together with the upraises and stopes connecting them. The stratified contact between the Little Giant blue limestone and the brown immediately beneath it has been exposed in four places, viz., at the mouth of the lower Little Giant tunnel, in the Little Giant winze, and in the west drifts from south levels 1 and 3 on the Visino. At none of these places can an appreciable quantity of silver be found, and in most of them the blue shades imperceptibly into the brown without the slightest sign of even a crack between them. Along the line of the Chloride fault (*OO*), where the brown overlies the Bonnybel blue limestone, an almost continuous ore-body exists, and has been explored and stoped from the grass roots down to the sixth level from the Visino incline. The strike of the Chloride fault is at right angles to the strike of the stratified rocks, consequently the levels in this Chloride fault ore-body are at right angles to those running along the strike faults in the Washington, Emma, and Aspen. (See plan map, Fig. 7.) The difference between the ore-bodies in the Spar, Washington, Vallejo, Emma, and Aspen and those of the Visino may be readily explained by reference to Figs. 8 and 9. The ores of the former are associated with strike downthrow faults, as represented in Fig. 8, and the ores occur as impregnations on both sides of the fault, irrespective of whether the limestones are blue or brown, while in the Visino the ores occur in a dip reverse fault, with the same peculiarities and utter disregard of stratified contact.

GENERAL CONCLUSIONS.

A close analysis of the foregoing facts brings us to the following conclusions:

1st. That the ores of Aspen Mountain are impregnated limestones, differing only from the mass of the Lower Carboniferous strata in the amount of their mineralization.

2d. That this mineralization is wholly independent of, and has no connection whatever with, the stratified contact, and that the bedding planes between the blue and brown limestones contain no more ore than any of the other bedding planes in the mountain.

3d. That the minerals have been deposited from aqueous solutions, which in their passage through the rocks followed the open channels formed by the faults, depositing their metallic contents in the surrounding limestones blue, or brown, wherever the conditions necessary for substitutive interchange were most favorable.

4th. The fault planes having been the channels through which the solutions have gained access to the limestones, and as all of the ore heretofore discovered has either been near or associated with them, it is but reasonable to suppose that future developments and discoveries will still further emphasize the above views.

Bumping During Distillation.—It is stated by A. Reissmann that all bumping of liquids undergoing distillation is effectually prevented by placing in them one or more platinum spirals closely wound around several pieces of pumice stone. The platinum should be heavy enough to sink the pumice.

Financial Improvement in Guatemala.—One of the most hopeful signs for the future of the Central American republics is the improvement in foreign credit which Guatemala has gained, owing to the able administration of Señor Don Mauricio Rodriguez, the present Minister of Finance. The old bonds have all been converted into 4 per cents, and the government is prompt in remittances of dividends, so that confidence is felt, and sales are active on the European exchanges. Guatemala is the pivotal republic of the Central American group, and her improvement will lead to reforms among her neighbors, and will produce a generally stable and prosperous condition. This is hopeful for the United States in view of the present tendency of American capital to invest in various engineering projects in Nicaragua, Honduras and surrounding States, for with the natural advantages these afford, nothing more than a healthy political status is necessary to lead to extensive commerce in which our people can share largely.

NICKEL ORES FROM OREGON.

Prof. F. W. Clarke describes, in a contribution to the *American Journal of Science*, the results of a series of investigations into the manner of formation of nickel silicates. About the year 1881 extensive deposits of this ore were found in Douglas County, Oregon. They lie near the surface in beds from four to thirty feet thick, and no second beds have been found underlying the first. Most of the samples obtained are intermixed with oxides of iron and with quartz, and are seamed with chalcedony. All of them are undoubtedly products of alteration, which is true of similar samples procured from the deposits in New Caledonia, and in North Carolina. The country-rock in these three localities is almost identical, consisting of a greenish rock, composed of olivine partially altered into serpentine, and having considerable quantities of enstatite mingled with it. The only noticeable difference in occurrence was that chromic iron, an almost universal associate of the nickel silicates, is absent in Oregon. Analyses of these various ores show great dissimilarity in composition, even between specimens from the same deposit. The percentage of nickel oxide varies from 0·24 to 45·15 per cent., but magnesia is present sometimes to the extent of 22 per cent., and this would lead to suspicions that alteration in the olivine, which is a silicate of magnesia and iron, had something to do with it. Actual analyses of the olivine rock confirmed at least the existence of nickel in it, varying in quantity from 0·10 to 0·26 per cent. Mr. Clarke quotes Dr. T. Sterry Hunt, Esq., as saying that nickel is almost always present in small quantities in olivine, and rarely absent from the serpentines, steatites (soapstones) and allied minerals of the Quebec group. As a result of these investigations Mr. Clarke concludes that the olivine, which always occurs with these ores, and which so readily alters, has supplied the nickel which is found as silicate, not only in Oregon, but at other localities so far observed.

GNEISS-DUNYTE CONTACTS OF CORUNDUM HILL, N. C.*

In making sections across the seams in different places a regular succession is observed from altered gneiss containing much alumina, through mica-like vermiculite, clays, and the magnesian silicate enstatite, to dunyte, a pale green magnesian rock, consisting almost entirely of chlorite. The chemical significance of this, checked by actual analysis of samples, is that the series represents a very constant change from aluminous silicates, through alumino-magnesian silicates into magnesian silicates. The corundum appears to be merely accessory, and may be considered as the result of a certain balance between the aluminous and magnesian solutions, which have by their union produced the chlorite and vermiculite found in these deposits. To account for the formation of corundum during this process, it is necessary to suppose the presence of carbonate of magnesia along with the silicate, which would permit of the replacement of the alumina, which would finally be precipitated either as the hydrate, or, under conditions as yet unknown, in the form of corundum. It is open to question as to whether the dunyte was anterior or posterior in formation to the gneiss, and purely chloritic minerals. An igneous theory would be the simplest, yet the dunyte furnishing magnesian, and the gneiss aluminous solutions, would explain the observed alteration products satisfactorily. That the chlorite and corundum are contemporaneous is evident from the intimate manner in which the two have crystallized together. In general the plates of chlorite seem to have attained considerable size before the corundum began to deposit and fill up the interstices, so that compact masses are found ranging all the way from almost pure corundum to almost pure chlorite. While perfectly formed crystals of pure corundum are not uncommon, crystals simply with regular faces are more frequent, which were apparently formed in a solution, having large numbers of small plates of chlorite or vermiculite floating in it, so that many of the corundum crystals carry folia of those minerals inclosed in them. Such crystals, found at Corundum Hill, are now in the collection of the National Museum at Washington.

A New Rustless Coating for Iron.—Mr. H. Haupt describes a process for protecting iron against corrosion, now employed by the Hydrogen Company of the United States at Port Chester, Pa., which is said to give satisfactory results. The company is now manufacturing sanitary soil-pipes treated by this method, which is described as follows:

"After the pipes have been lowered into the retorts by means of a traveler, the retorts are closed for about fifteen minutes until the contents are heated to the proper temperature. Steam from a boiler at sixty pounds pressure is then introduced into the superheater, which it traverses, and from which it escapes at the temperature of the iron upon which it acts for about one hour. A measured quantity of some hydro-carbon is then admitted with a jet of steam, followed again by a fixing bath of superheated steam, which completes the process. Professor Gesner, the director of the works, says there is no pressure in the retort and that there are no free explosive gases. The water seals attached to the retorts shew only slight oscillations, but not an inch of pressure, and when the covers are removed and air admitted there is no explosion, as there always is when free hydrogen or carbonic oxide are present. The absence of pressure and of explosive gases is a proof that all the operations have been so nicely regulated as regards material used, quantity and time of application, that a perfect absorption and union of the carbon, oxygen, and hydrogen with the iron has been effected. The protection thus afforded to the iron is not a mere coating, like paint, but is said to be an actual conversion, to a greater or less depth, in to a new material. When properly treated, this material does not seem to be detachable by pounding, bending, hammering, rolling, or heating. The pipes treated at Port Chester have been immersed in baths of dilute sulphuric acid and exposed to the salt air for weeks without change, while untreated pipes were quickly covered with red oxide or with sulphate of iron."

This process makes claims to advantages over the Bower-Barff in making a coating that does not crack and is more resisting.

*Abstracted from a paper by Thos. M. Chatard in Bulletin No. 42, W. S. Geological Survey.

Increase in Value of the Black Diamond (Carbonado).—The use of the black diamond or carbonado has increased since 1862, when they were first used for rock drilling machines, to such an extent that the price per carat rose from 4 to 5 francs in that year, to 35 francs ($7) for the larger stones at present. The price is not likely to be lowered, for various other stones, rubies, sapphire, agate and quartz have been tried as substitutes, but without success.

Cost of Motive Power Distributed from Central Electric Light Stations.—The Berliner Elektricitäts Werke are now supplying current for running electromotors of from 0·08 to 12 H. P., the maximum current required varying from 1 to 12 ampères. On the assumption that the motors are used for 3000 hours annually, the cost of 1 H. P. varies from 5¼d. for the smallest motor to 3¼d. for the largest (say 11 cents to 6 cents) per hour.

Variation with Temperature of the Solubility of Sulphates.—In a summary of a paper by A. Etard is an interesting statement regarding the solubility of certain sulphates. He says that the solubility of cupric sulphate increases with a rise in temperature up to 100° C. (212° F.), but beyond that point its solubility decreases as the temperature is raised. This deflection in the curve of solubility is observed with almost all sulphates. In the cases of cadmium, zinc, manganese, and iron sulphates this deflection occurs below 100° C., and a similar decrease in solubility is observed with salts of carbonic, sulphurous and succinic acids, but not with salts of monobasic acids, excepting feeble organic acids.

A New Gas Producer.—*Engineering* describes a gas producer, the invention of Mr. J. W. Shell, of England, in which the special feature is its annular blast box, with a movable grate which allows the clinkers and ashes to be removed without stopping the production of gas, the apparatus being continuous in its action. Slack coal only is used, and it is stated that the producer can be closed for twenty-six hours, if necessary, and started again almost immediately. This producer has been used very successfully for furnishing gas for boilers. The usual size is 9 feet to 10 feet in height, and 8 feet in diameter, external measurements. This will gasify 4 cwt. of coal per hour, and it is further stated that 150,000 cubic feet of gas can be made per ton of coal, at a cost of about one penny per 1000 feet.

Storage of Petroleum in Russia.—Russia has enormous facilities for tank storage of petroleum. According to the statistics furnished to the Russian Minister of Finance there was at the end of 1887 a total storage capacity in the empire of 114,308,650 gallons. In Tsaritzin, on the Volga, there are facilities for storing 31,500,000 gallons, and at Batoum 20,250,000 gallons. There are enormous tanks also at Domino, near Orel, and at Saratoff and Nijni Novgorod. Most of these iron tanks have been erected within the last five or six years. They have cost approximately for tanks of 13,500 gallons capacity, $550; of 112,500 gallons capacity, $2000; and of 450,500 gallons capacity, $6000. Notwithstanding this concentration in localities of such large quantities of oil, the system has been carried on without any serious accidents or disasters.

A New Asbestos-Metallic Steam Packing.—A new kind of asbestos packing is now being introduced in England, which differs from the ordinary packing in having metal tubes made of a lead alloy running through the center. These tubes impart more strength to the packing than when it is made of asbestos fiber alone. Lead wires have before now been used to make up for the somewhat brittle nature of the asbestos fiber, but the extra weight of these has been found somewhat objectionable. Tubes are now adopted in preference to solid lead cores, because of their smaller weight. The body of the packing is of asbestos yarn, plaited around the tubes by special machinery, which at the same time threads asbestos fiber through the tubes. The object of filling the tubes with asbestos fiber is, that in the event of excessive heating and melting out of the tubes, there shall still be a serviceable packing left. The number of tubes varies with the diameter of the packing; an asbestos rope one inch diameter has six tubes of $\frac{3}{16}$-inch external diameter inserted. For smaller packings four or five tubes only are used.

An English Decision Against Edison's Incandescent Light Patent.—A cable from London to the *Evening Post* announces that the English courts have rendered a decision in an electric light suit which is of great importance in this country, as practically the same point is involved in the litigation between rival companies here. The decision declares against the Edison patent of 1879, but sustains what is known as the Cheesebrough patent of 1878. The later patent is on the invention of Sawyer & Man for incandescent lighting, and was issued in England in the name of their attorney. A patent was issued to Sawyer & Man in this country simultaneously with their English patent, but subsequently Edward Weston satisfied the United States Commissioner of Patents that he and not Sawyer & Man was the first inventor of the device for giving uniformity in sectional area of carbon filament, and he was awarded the patent.

In England it is not allowable to go behind an issued patent, and therefore no test could be made there, and the Cheesebrough patent, which is owned by the Edison-Swan United Companies, holds good; but in this country the Weston patent, which superseded the Sawyer-Man patent, is owned by the United States Electric Lighting Company, with which the Edison Company has been in litigation for years.

President Hebard said the electrical manufacturers in England were preparing to manufacture incandescent lamps in anticipation of the decision in this case. If a similar result follows in this country incandescent lighting will be much cheaper than it now is.

BOOKS RECEIVED.

[In sending books for notice, will publishers, for their own sake and for that of book buyers, give the retail price? These notices do not supersede review in another part of the Journal.]

The Chemical Analysis of Iron. By Andrew Alexander Blair. Published by J. B. Lippincott Company, Philadelphia, Pa., 1888. Peges 282 and Index. Illustrated. Price $4.

The Lixiviation of Silver Ores, with Hyposulphite Solution. By C. A. Stetefeldt. Published by the author, New York, 1888. Pages, 233 and Index. Price, $5.

THE METALLURGY OF STEEL.*

By Henry M. Howe.

(*Continued from page 27.*)

From this we may calculate as follows, assuming that each man engaged in compression does eight effective hours work daily. I think it more conservative to assume that the weight to be remelted when compression is not employed at 25% than at 30%.

	$ per ton of ingots. Direct firing.	Gas firing.
Saving by diminishing remelting $\frac{(\frac{25}{100} - \frac{5}{100})}{100}$ Lbs. $\times 2240 \times$ $ (0·01 and 0·005)	$4 48	$2.24
Labor of compression $\frac{\$2.00}{8}$	0.25	0.25
Difference per ton of ingots	$4 23	$1.99
" " pound "	0·19 ct.	0·09 cts.

0·19 cent per pound will certainly and 0·09 cent will perhaps more than cover the incidental costs of compression, such as power, depreciation, and the shorter life of the moulds.

In 1883 Mr. William Metcalf believed that compression would cost more than remelting for small crucible steel ingots.[a] This, however, referred to a much more costly and probably much less effective method of compression:[b] moreover, the cost of remelting at his admirably conducted establishment, especially with natural gas, is comparatively low.

While this method is well suited to the flat saw ingots, it remains to be seen whether it can be applied readily to common square pyramidal ingots.

D. *G. W. Billings* employs a common mould, replacing its bottom by a piston, which is forced upwards as soon as teeming is completed, pressing the top of the ingot against a resistance plate which has been slipped in meanwhile.[c]

E. *W. R. Hinsdale* found that an ingot of high-carbon steel, 5·5 inches square, to which a pressure of 12,000 pounds per square inch was applied within five seconds after casting, contained when cold innumerable blowholes. Under a pressure of 60,000 pounds per square inch, applied 30 or 40 seconds after casting, it shortened by about one eighth of its length, to wit, from 25 to 22 inches, and after cooling had a fracture like that of a forged bar; but the pipe remained in the attenuated shape of such a flaw as one finds in a bar forged from the piped end of an ingot. When, however, a pressure of 20,000 pounds per square inch was applied after the same interval through a perforated plunger D, Figure 47, the crust of metal under the perforation broke with a loud report, and a punching followed by gas and molten metal shot into the performation, forming a stud which was the only scrap, as the ingot itself was absolutely solid.[d]

Daelen bulges in the top or bottom, Williams the side of the ingot: both avoid the enormous waste of energy implied in compressing the already frozen walls longitudinally. There appears to be no limit to the pressure which can be obtained by Daelen's system. Were a high pressure applied in Williams' system it would probably burst the top or convex side of the ingot, which would hardly fit the mould as exactly as is shown in the cut. It may be questioned whether it be practicable to arrange his mould so that its different parts shall slide past each other, and still be strong enough and tight enough to prevent the escape of molten metal under heavy pressure.

Hinsdale's modification might well increase the efficiency of Whitworth's system as a means of obliterating the pipe.

GASEOUS PRESSURE has been applied to molten steel in several ways. It has an advantage over Whitworth's method, in that the compressed gas attacks the ingot at every point, including the weakest ones. Even if the externally applied gas does not itself enter or compress the metal, it still tends to prevent internally liberated gas from escaping through the ingot's shell, to raise the pressure within the ingot, and thus to check the internal liberation of gas and the formation of blowholes. In this it tends to increase the pipe: but if powerful enough to bend in the sides or top of the ingot by ever so little, it lessens and may obliterate the pipe.

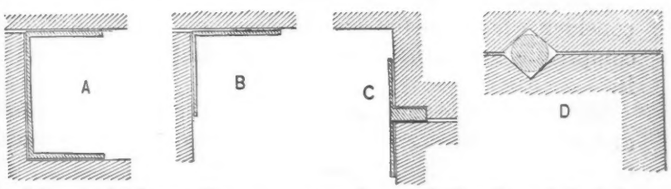
F. *Bessemer* patented in 1869 methods of creating a gaseous pressure in ingot moulds by the combustion of gas yielding substances and by the vaporization of liquids.

G. *Krupp* employed liquid carbonic acid, and is said to have obtained a pressure of five tons per square inch.[e]

The interior of a massive, tightly closed mould, after it has received the molten steel, is connected with a vessel containing liquid carbonic acid: part of the carbonic acid immediately volatilizes, raising the gaseous pressure, which may be regulated by controlling the temperature of the carbonic acid. This is readily done by raising or lowering the temperature of an oil or water bath in which the vessel containing it is immersed, by circulating steam or cold water.

To prevent the escape of carbonic acid from his mould Krupp tightens the joint between mould and cover by a thin ring of copper or steel, with a channel-, angle-, or T-shaped cross section (A, B, C, Figure 48), which acts like the leather cup-packing of hydraulic cylinders, and becomes tighter the higher the pressure rises. Another expedient is to squeeze a round copper or steel ring in a rectangular recess between cover and mould (D, Figure 48).

Fig. 48.—JOINTS BETWEEN INGOT-MOULD AND COVER (F. A. KRUPP).



He would keep the upper surface of the ingot hot by placing on it a layer of molten slag or of refractory material, or by lining the mould top with non-conducting material, apparently so that the ingot top, long remaining soft and flexible, may transmit the pressure to the interior of the ingot.

H. The explosion of gunpowder within the firmly closed mould, proposed by Galy-Cazalat,[f] might lend pyrotechnic interest. Ingenious methods of introducing and exploding the powder and of rendering its presence effective are proposed by James Henderson, who also suggests obtaining steam pressure by introducing ice.[g]

I. *W. R. Jones*[h] of Pittsburgh formerly blew steam into the tops of his ingot moulds, at a pressure of 80 to 150 lbs. immediately after casting. The moulds were tightly closed at the top, while their stools had grooves 5-8th inch

* Copyright by the Scientific Publishing Company, 1887.

a Proc. Engineers Soc. West. Penn., 1883, 251.

b G. W. Billings' method.

c U. S. Patents 298, 661-2, May 13th, 1884.

d W. R. Hinsdale, private communication, March 13th, April 26th, 1888, U. S. Patent 332,656, Dec. 15th, 1885.

e British patent 2,860, June 30, 1881, F. A. Krupp to A. Longsdon. Krupp here describes ingot moulds of many forms for compression, both for top and bottom castings.

f U. S. patent 62,113, Galy Cazalat (sic), Feb. 19, 1867. British patent 3,300, Dec. 21st, 1865, Galy-Cazalat.

g U. S. patents 315,741, April 14th, 1885, and 316,544, April 28th, 1885.

h Journal of the Iron and Steel Institute, 1879, II., p. 476; Jeans, Steel, p. 503.

wide and 1-16th inch deep, for the escape of gas, and communicating with the outer air. It is said that the molten steel considerately does not enter these grooves, but that the gases escape from them with a loud roar, and that the ingot is freer from piping then when cast in the usual way. What appears to be a slight modification of this method is said to have been adopted at Barrow and at the works of Messrs. Bolckow, Vaughan & Co.[a]

Now as the ingot, whose outer crust solidifies almost instantly, cools and contracts, it would be expected to draw away from the sides of the mould, which, being rapidly heated, expands and increases the space between itself and the contracting ingot. The steam blown in at the top of the mould is thus permitted to pass down between the ingot and mould and to escape (together with any gas actually evolved from the ingot) through the holes which have been provided in the stool of the mould. That the steam, with such ample means of escape, should under these conditions exert a pressure on the steel at all commensurate with that which the rapidly cooling exterior of the ingot exerts on the comparatively slowly cooling interior, or that indeed it should exert any pressure worth considering, is improbable. It seems like merely substituting an atmosphere of steam for one of ingot gas. Whatever influence the steam has would naturally be attributed to its cooling the crust of the ingot and thus preventing rising, acting like so much water.

In practice it is difficult to tighten the joints quickly, and, in spite of the many advantages claimed for this procedure, Captain Jones does not now employ it.[b]

J. *The Accumulation of Gaseous Pressure within* the ingot itself is promoted by chilling its top with water, which bottles up the gas evolved during solidification. This of course tends to arrest further evolution of gas, and thus to check the formation of blowholes: but this local cooling must tend to lower the pipe by hindering the steel in the top of the ingot from flowing down to feed it.

§ 230. EFFECT OF LIQUID COMPRESSION.—Let us first consider what benefits should be expected from liquid compression, and then what have actually been traced to it.

We may divide the compression into two periods, before and after the passage from the liquid to the plastic state, or into "liquid" and "plastic compression."

It is hard to see how liquid compression can have any beneficial effect. Liquids are practically incompressible: that the steel is not enduringly compressed will be shown. If the liquid steel is not giving off gas, applying compression will effect nothing. If it is, compression cannot hasten the escape of the gas-bubbles,[c] which will rise by gravity to the surface with or without compression; but it must tend to retard or even stop the evolution of gas, whose solubility increases with the pressure and thus to increase the quantity of gas retained by the steel, the supersaturation which occurs at the moment of solidification, the volume of gas then evolved, and the extent to which blowholes form.

Plastic compression, however, may actually squeeze the blowhole-gas out through the crust of the ingot as we squeeze water out of a sponge: it may cause the reabsorption of part or indeed all of the gas contained in the blowholes, and may squeeze and weld the sides of the pipe together: and if gas remain which is neither squeezed out nor reabsorbed the pressure will diminish the size of the cavities which contain it. The gas which is thus reabsorbed and compressed is not indeed eliminated: and it is possible that it may be re-evolved and may re-expand should plasticity without compression recur: but it could then hardly form in the relatively stiff pasty metal as large cavities as it would have caused at the higher temperature and in the less viscous metal of its first liberation.[d]

In this view it seems desirable to postpone compression as long as possible, so that, before it begins, as much as possible of the gas may voluntarily escape. Indeed, it would be well to hasten its escape from the molten metal by creating a partial vacuum.

Small ingots may solidify so quickly that we cannot in practice discriminate between liquid and plastic compression: but the distinction may be valuable for large ingots.[e]

Nearly two years after the above was written, and just before going to press, I receive what seems to be a striking confirmation of the correctness of these inferences. On applying a pressure of 12,000 pounds per square inch to the bottom of some 3·5 inch square ingots soon after teeming, Mr. W. R. Hinsdale found that, if the pressure were applied as soon as possible, the ingot contained innumerable round cavities: while if he waited a little before applying the pressure, blowholes were found only in the upper part of the ingot, and the longer he waited the nearer to the pipe the blowholes were, till at last they disappeared, the pipe remaining.[f] Now the pressure should not retard the upward swimming of bubbles, provided that they remain as bubbles: indeed, in the belief of many, pressure tends to liquefy iron as it does ice. The most simple explanation seems to be that gas bubbles were rising through the steel: (they would naturally be found latest in the top of the ingot, because it is cast latest, and because bubbles rise thither from below): that pressure caused their reabsorption: that this gas was again set free, either on solidification or fall of pressure, causing blowholes. Hence the longer compression was deferred the less gas was present to be temporarily absorbed, and the fewer blowholes formed on its re-emission.

Plastic compression then is sound in principle: the difficulty is in applying it. Whitworth is able to employ an enormous pressure, but at a disadvantage. Daelen's method permits as great a pressure at much better advantage: his method appears much the more reasonable; yet it is not employed.

(TO BE CONTINUED.)

NOTE.—The publishers of the ENGINEERING AND MINING JOURNAL will thank the readers of this article if they will promptly call attention to any inaccuracies they may observe in it.

[a] Journ. Franklin Inst., CX., p. 19, 191, 1880.

[b] In a paper read in December, 1878, Chernoff speaks of casting under a steam pressure of 88 to 147 pounds per square inch, the method of la Chaléassière, in France.

[c] The mental fogginess of many prominent metallurgists on this subject is disheartening. We hear them talk of pressure applied to the upper surface of liquid steel forcing gas bubbles to travel downwards. Let them experiment with an ordinary soda-water syphon, which is in precisely the condition of ordinary gas-bearing liquid steel, and endeavor to grasp the A B C of physics. Let them slightly release the pressure by drawing a little water: bubbles will immediately rise: let them immediately increase the pressure again. Will the upward path of these bubbles be reversed by the pressure, and will they now travel downwards? The increased pressure may cause their reabsorption, but it will not alter the direction of their travel, which is determined by gravity alone. The effect of pressure in expelling fluids from pasty solids is clearly shown in the expulsion of cinder from a puddle-ball by squeezing: the direction which the cinder takes in escaping is not directly away from and in the line of the compressing force, but each particle follows its own path of least resistance, which will in general be nearly normal to the nearest surface. A gas would be affected in precisely the same way but it is not so easy to illustrate this experimentally.

[d] Cf. the author, Proc. Soc. Arts, Mass. Inst. Technology, 1886-7, p. 18.

[e] See experiment by H. W. Lash, § 202, F.

[f] W. R. Hinsdale, Private Communication, March 13, 1888.

PERSONAL.

The Merchant-Steel Manufacturers' Association will meet at the Hotel Brighton, Long Branch, on the 25th inst.

Mr. James L. Brazell, interested in various mining enterprises, has returned to San Francisco after a long trip through Asia, Africa and Europe.

Dr. W. K. Brooks, of Johns Hopkins University, Baltimore, has been appointed a naturalist of the United States Fish Commission for the summer.

Mr. C. A. Moreing, a mining engineer of London, England, is at present visiting the Robinson District, Nevada, where he will inspect a number of mines.

Mr. William W. Curran, Superintendent and Line Manager of the Pocahontas Coal Company, Va., has resigned his position on account of continued ill health.

Mr. Bradford H. Locke, mining engineer, vice-president and chief engineer of the Gilpin, Colo., Tramway Company, is stopping at the Sturtevant House, New York.

Mr. David W. Ackerman, one of the superintendents of the Reading Iron-Works, Reading, Pa., died at that place on the 17th inst., after an illness of several months.

Mr. John Hubler, one of the oldest residents of Schuykill County and a pioneer in the mining of coal, died at Pine Grove, Pa., on the 18th inst., aged ninety-three years.

Mr. Walter C. Hadley, Manager of the Silver Mining Company of Lake Valley, Sierra County, New Mexico, is visiting the Western States and is now at Butte City, Montana.

Messrs. C. C. Vermeule and J. R. Bien, civil and mining engineers, have opened an office in this city. Mr. Vermeule has been connected for some years with the Geological Survey of New Jersey.

Prof. W. S. Bayley, of Colby University, Maine, has gone to Pigeon Point, near the Canadian boundary, to resume the study of the rock formation there for the United States geological survey.

Mr. Josiah Strickler, the former car distributor of the old Connelsville, Pa., coke syndicate, has been appointed engineer and superintendent of a large number of coke-ovens to be built near Durango, Mexico.

Dr. Julius Nelson, a special student at Johns Hopkins University, has been appointed professor of zoology in Rutgers College, New Brunswick, N. J., and Dr. F. S. Herrick professor of biology in Adelbert College, Cleveland, O.

Mr. Henry H. Mansfield, who for many years was connected with the firm of Barrows & Co., has been engaged by Messrs. T. Williams, Harris & Co., engineers and contractors, of this city, to manage their equipment and supply department.

We are happy to announce that after some years of only partial attention to business, Dr. E. D. Peters has regained his health sufficiently to once more attend personally to his regular business of erecting copper works. For the next few months he may be addressed at Sudbury, Ontario.

Mr. W. Hildenbrand, civil engineer, is superintending the work of inspection of the anchor bars and iron work of the Allegheny, Pa., suspension bridge structure. It is now about thirty years since the work was completed, and the inspection is made to determine if any disentegration or corrosion has occurred where the iron work is covered by masonry or other wise.

In the State Convention of the Junior Order of American Mechanics, at Wilkes-Barre, Pa., held on the 18th inst., the following officers were elected: S. C. Weadley, of Philadelphia, State Counsellor; John P. Winnower, of Lancaster, Vice State Counsellor; John W. Calver, of Philadelphia, State Treasurer; A. L. Salomons, of Pittsburg, and J. V. Gillespy, of Philadelphia, National Representatives.

Charles Macdonald, the eminent civil engineer, has recently returned from Australia, where he successfully put down the foundations for the great Hawksbury bridge to a depth of 160 feet below the water level. The superstructure of the bridge is now being put up. Each span is built an a float near the shore, and then floated out to the piers. The float at high tide carries the truss over the pier, and as the tide ebbs the truss settles down on to its seat. The truss for a span more than 400 feet in length was floated from the point at which it was built and put in place on the piers, and the float returned to its place, ready to have another truss built inside of ten hours. The work done reflects great credit on Mr. Macdonald and on the Union Bridge Company, which is building the Hawksbury bridge.

The Secretary of the American Society of Mechanical Engineers makes the announcement that the 18th convention of the society, which will also be the ninth annual meeting, will be held in the city of Scranton, Pa., beginning Monday evening, October 15th. A later circular will give the details of sessions, excursions, etc. The meeting comes somewhat earlier than usual, in order that the hill country of Pennsylvania may be enjoyed to the best advantage. The society has so generally indorsed the plan of having all its papers in print and distributed in advance to those who expect to attend the meeting, that the attention of those who intend to be authors at this coming meeting is especially drawn to the necessity of having their papers, with illustrations, etc., complete, in the hands of the Publication Committee not later than August 20th, 1888.

The following Princeton, N. J., men have received professorships: Dr. Malcolm McNeill, assistant professor of astronomy at Princeton, N. J., has accepted a call to the professorship of astronomy and mathematics, in Lake Forest University, Illinois; Professor J. Mark Baldwin has accepted the professorship of philosophy at Lake Forest University; Professor A. C. Armstrodg has accepted the chair of philosophy at Wesleyan University, Connecticut, and Professor Woodrow Wilson, the chair of historical and political science in the same institution; Ethelbert D. Warfield has accepted the presidency of Miami University, at Oxford, Ohio; Dr. Mateer goes to the chair of biology in Wooster University, Ohio; Dr. Henry Crew takes the chair in physics at Haverford College in Pennsylvania; J. C. Boyd has accepted the chair of mathematics in Macalester College, Minnesota; Dr. Arthur L. Kimball has been promoted to an assistant professorship in physics at the Johns Hopkins University, Baltimore.

INDUSTRIAL NOTES.

The Belleville Nail Company, Belleville, Ill., has increased its capital from $100,000 to $300,000.

The rolling mill of F. L. Kimberly & Co., at Sharon, Pa., resumed work on the 23d, after four months' idleness.

The Berlin Iron and Lead Works, of Pittsburg, Pa., contemplate the removal of their works to McKeesport.

The American Well Works of Aurora, Ill., have opened a wholesale department at Nos. 11 and 13 Canal street, Chicago, Ill.

The Washington Ammonia and Chemical Company, Georgetown, D. C., one of the largest manufacturing companies in this line, is now running to its fullest capacity.

The Cartersville Iron Furnace Company, of Cartersville, Ga., have been chartered by John Postell, D. W. R. Peacock, Geo. A. Patillo and others, with a capital of $25,000.

The Western Iron Manufacturers' Association at a meeting held at Pittsburg, Pa., voted to dissolve the organization. All of the members may now sign the Amalgamated Association scale.

The Braddock Wire Company, Rankin, Pa., announce that in the suitof theWashburn & Moen Manufacturing Company and I. L. Ellwood against them the complainants withdrew, July 2d, their motion for injunction.

The Interior Department, Washington, D. C., has purchased and is now putting in place a Brush electric light plant capable of furnishing eight hundred lights. The plant will cost about $10,000 and will be operated by the Department employés. The cost of lighting the Department building hitherto has been about $500 per month.

Mr. Randolph Brandt, of New York, manufacturer of the "Selden Patent Packing," has increased his facilities for its manufacture so as to make all sizes from one eighth to three inches in diameter, varying by sixteenths in the larger and by thirty seconds in the smaller sizes. He is also enabled to carry a fuller stock of the goods.

The Bross Compound and Manufacturing Company has been incorporated at East St. Louis, Ill., with a capital of $50,000, for the manufacture of compounds for cleaning and removing scales from boilers, engines, etc., and to deal in engineers' supplies. The incorporators are Frederick M. Colburn, John P. Brougherand and Davis R. Boogher.

All the buildings for the Oregon Iron and Steel Company, at Oswego, Oregon, are finished; the furnaces and stoves are also completed. The boilers and engines are in position. In short, everything is finished with the exception of the steam and water pipes. It is anticipated that the fires in the furnaces will be lighted before the 1st of August.

The Grant Locomotive Works, of Paterson, N. J., has been compelled to shut down, being unable to compete with similar establishments elsewhere it is said. It is estimated that it would involve an outlay of $150,000 to $200,000 to place the establishment in a condition to compete successfully with the great locomotive building works throughout the country.

Messrs. J. E. Emerson, Thomas Midgley, and others, have purchased a tract of land consisting of 24 acres, and situated at the north end of Beaver Falls, Pa., for the purpose of building thereon a large works in which will be manufactured wire belting and wire hose under the exclusive patents of Mr. Midgley. The work of erecting suitable buildings will be commenced at once.

The Eliza Iron Company, of Wellston, Ohio, operating the Eliza Furnace under lease, will put the furnace out of blast in the course of two or three months and will retire from business, on account of the depression in the iron trade. The company state that the cost of manufacture of pig-iron at present is over and above the price obtained for it, which is the reason for the above step.

Mr. J. D. Thomas, representing the Westinghouse Machine Company, of Pittsburg, has departed for Rome, Italy. The object of his visit there is to introduce the Westinghouse system of electric lighting. Some time ago six dynamos, manufactured by that company, were sent to Rome and Turin. These machines will be put in operation by Mr. Thomas, and an electric lighting plant erected in both the cities named.

The National Association of Nut and Bolt Manufacturers met in New York on the 19th inst. About fifty members were present. The extreme dullness that now prevails in the nut trade was discussed, but no action of importance was taken. The association is composed of all of the manufacturers of nuts in this country, with one or two exceptions, and regulates the wholesale price on nuts. No change in the present prices is contemplated.

The United States Commissioners to the Paris Exhibition are Gen. Wm. B. Franklin and Somerville Pickney Tuck, who are now in this city engaged in the preliminary work of preparing documents for distribution, having opened an office at 35 Wall street. The space allotted is about 7000 square yards. The freight charges out and return are defrayed by the Government, from the Congressional appropriation of $250,000 in aid of the exhibition. The exhibition opens May 5th, and closes October 31st.

The Edison Phonograph Company, which owns and controls all of Edison's patents, has been sold to Jesse H. Lippincott, of New York, for something over $1,000,000. By the terms of the sale he has the right to all of Mr. Edison's improvements during the next fifteen years. Mr. Lippincott has also become the licensee of the American Graphophone Company, of Washington. A new company called the North American Phonograph Company has just been organized to put both these machines into general use.

The stern post of the cruiser "Charleston" was successfully cast at the Pacific Rolling Mills, at San Francisco, this week. The weight of the charge placed in the furnace was 27,295 pounds of metal, and the dressed casting weighed 11,510 pounds. Test pieces taken from this casting gave an elastic limit of 33,742 pounds per square inch, a tensile strength of 63,112 pounds per square inch, 18 per cent elongation in 8 inches, and 20 per cent reduction of area. Test pieces were bent cold over radii varying from ⅞ to 1⅝ inches through angles varying from 218 degrees to 234 degrees, without fracture.

The new furnace of the Iron Mountain Company, at Durango, Mex., is a success and active work in smelting the iron ore is going on. Former furnaces were failures owing to the inferior brick employed, but in this furnace, it is stated, brick is used that was imported from the United States at a cost of $250 per thousand. A railway is to be built from the top of the furnace to the Iron Mountain. The ore will then be taken directly to the furnace and dumped in, thus doing away with the necessity of hoisting the ore. The capacity of the furnace is 40 tons per day. The engine for the new rolling-mill is in place. Two large puddling furnaces will soon be built.

The disruption of the association of manufacturers of iron, steel and nails has actually commenced, and a member stated to-day that it was only a question of time until the organization ceased to exist. Within the last twenty-four hours twelve firms have sent in their resignation, and every mail is increasing the list. The association was organized in 1882 for the purpose of arranging a yearly scale of wages with the employés of its members and not to regulate the selling price of iron, as has been erroneously stated. Seventy-one firms, employing 100,000 men and representing $75,000,000, belonged to the association. The disruption will have no effect on the Amalgamated Association. The scale will be drawn up annually as in the past, but there will be no conference with the manufacturers. Each firm will act for itself in deciding whether to sign the scale.

CONTRACTING NOTES.

Machinery and supplies wanted. See page xiv.

Contracts open will be found on page xxi. New contracts this week: No. 960, Marble Slabs; No. 961, Engine Boilers, Supplies, etc.; No. 962, Coffer Dam, Lockpit, etc.; No. 963, Water-Works; No. 964, Water-Works; No. 965, Water-Works; No. 966, Water Tower, Pier, etc.; No. 967, Cement, Iron, and Other Supplies; No. 968, Cement and Lime; No. 969, Coal; No. 970, Electric Lighting; No. 971, Electric Fire Alarm; No. 972, Oil, Paints, Iron, and Other Supplies; No. 973, Dredging and Repairing Canals; No. 974, Ordnance Supplies, Hardware, Paints, Oils, Fuel, etc

The Fuel Gas and Electric Engineering Company, of Pittsburg, Pa., has contracted to put in a fuel gas plant at Salem, O. The city council has granted franchises to a local company capitalized at $150,000 to operate the plant and furnish gas for heating, illuminating, and power purposes.

An agent of the Government of Mexico is visiting New York and Pittsburg for the purpose of making contracts for a dozen light-houses for the Pacific Coast. A contract will probably be made for the first two in America, and if terms are satisfactory as against English, the balance will be made in this country also.

The contracts for gas-tanks and holders for the Twenty-fifth Ward Gas-Works, Philadelphia, Pa., have been awarded to E. D. Smith and Morris, Tasker & Co. The directors also divided the contract for cast-iron pipes in connection with these works between

the Donaldson Iron Company, Camden Iron-Works, and the Gloucester Iron-Works.

The Board of Water Commissioners of the village of Sing Sing, N. Y., awarded the following contracts for the construction of the new water-works there: Fogg & Schioner, New York, laying pipe, $20,425; Ganung, Ryder & Co., Sing Sing, high service reservoir, $3,576; Ganung, Ryder & Co., Sing Sing, pumping station, $9,045; Ward & Leary, Jersey City, Indian Brook reservoir, $23,148; Ward & Leary, Jersey City, intermediate reservoir, $14,641; Gloucester Iron Company, Philadelphia, pipe and special castings, $38,261; R. D. Wood & Co., Philadelphia, hydrant and valves, $4,244; total, $113,344.

The sum of $150,000 has been appropriated, and the contract for the pump, engine and boiler is yet to be given out.

GENERAL MINING NEWS.

Shipments of iron ore from the mines of the districts mentioned below for the season up to and including July 11th, as reported by the Marquette *Mining Journal*, were as follows:

	Tons. 1888.	Tons. 1887.
Marquette, Marquette District	175,089	290,273
St. Ignace, " "	46,709	34,585
Escanaba, " "	289,153	334,747
" Menominee District	374,536	420,686
" Gogebic District	85,718	
Ashland, " "	308,096	353,695
Two Harbors, Vermillion District	98,086	109,368
Total tons	1,377,387	1,543,349

PITTSBURG & SOUTHERN COAL COMPANY.—A decision has been rendered by the Supreme Court of Louisiana which is of great interest to the coal operators shipping to Louisiana. This company shipped a large quantity of coal to Louisiana. Before it was landed the sheriff of one of the parishes levied on a number of the barges in the Mississippi River to sell it for taxes which had been assessed upon it as "the property of the State." The Pittsburg & Southern Company brought suit for an injunction to restrain the sale, on the ground that the State law directing the taxation was in violation of the commerce clause of the Federal Constitution. A preliminary injunction was granted, but on a hearing in court was dismissed. An appeal was taken to the Supreme Court of Louisiana, the action of the lower court was sustained. Justice Burmudez in his opinion held that as the coal was not in transit, but had reached its destination, it had become intermingled with the general property in the State of Louisiana, and was therefore subject, as all other property is, to taxation. The tax levied was $20 per boat, and will amount to about $20,000 per year on Pittsburg's coal product sent to Louisiana.

TENNESSEE COAL, IRON & RAILROAD COMPANY.—The net earnings of this company for June were $57,000; proportion of interest and sinking fund, $37,000. The net earnings for six months were $331,800, against $322,200 in the same time in 1887.

ARIZONA.

COCHISE COUNTY.

OLD GUARD MINING COMPANY.—On the 11th inst. the Old Guard mine was attached by Paul B. Warnekros for a debt of $2,660.25. This mine is said to be looking well, and it is confidently asserted that the debts will be paid in a few days and work resumed on the property. In our issue of May 28th, 1887, we referred to the organization of this company.

GRAHAM COUNTY.

DETROIT COPPER COMPANY.—We have been informed that Mr. F. L. Bartlett, of Portland, Maine, is building a large smelter for this company. It is to be shipped some time in August.

PINAL COUNTY.

SILVER KING MINING COMPANY.—We are officially advised that the production for June was as follows:

	Ounces.
Silver (fine) in concentrations	30,087·31
Silver (fine) in bullion	17,310·32
Total	47,397.63
Gold	2·21 ounces fine.

The output for July will be much larger if weather and water supply hold favorable.

CALIFORNIA.

The Biggs bill for the investigation of the mining débris question in California, as amended and passed by the House on the 13th inst., authorizes the Secretary of War to detail three officers from the engineer corps as a commission for the purpose of making a thorough investigation of that question and for the complete examination and survey of the injured navigable river channels, their tributaries and the lands adjacent thereto, with a view to their improvement and to devise some plan whereby the conflict with the mining and farming sections may be adjusted. The bill appropriates $10,000 for the purpose and directs the Secretary of War to report the result of the investigation to Congress.

CALAVERAS COUNTY.

Our correspondent sends us the following from Angel's Camp:

All the mines in this vicinity are working up to their full capacity and doing well.

The Whittle quartz mine, located two and a half miles south of this place, near Chaparral Hill, has recently been bonded to some San Francisco parties. After putting up new hoisting-works they resumed the sinking of the old shaft, which was already 60 feet deep. The enterprise has proved a success as far as they have gone down, having on the start struck a very rich chute of ore, the vein being 4 feet wide, showing coarse gold all over for 20 feet in depth, and at that point there are no signs of its giving out.

An error was made in the name of one of the mines in the issue of the ENGINEERING AND MINING JOURNAL of June 30th. In the article on the Calaveras mines it should read Utica instead of Eureka mine.

MONO COUNTY.

BODIE CONSOLIDATED MINING COMPANY.—Recent reports state that the company is getting bunches of good ore on the 1200-foot level.

STANDARD CONSOLIDATED MINING COMPANY.—Nearly 300 tons of ore weekly are being shipped to the mill.

COLORADO.

CLEAR CREEK COUNTY.

GOLD CORD MINING AND MILLING COMPANY.—This company has been organized with a capital stock of $1,000,000, shares $10 each. The company will operate in Clear Creek County, with the principal office in St. Louis and a branch office at Idaho Springs. The incorporators are Justin F. Weston, Edwin Wallace, Eugene C. Andrews, John C. Hutchinson, M. D. Degge, Tersile L Bozzalla, Daniel D. Fassett, John McCargo, J. H. Siegrist, Sr., Walter T. Flower, Albert Hass and J. M. Bates, of the city of St. Louis, and Theodore H. Lowe, of Denver.

PAY ROCK CONSOLIDATED MINING COMPANY.—Mr. J. M. S. Eagan, the manager of the Pay Rock group, has started a gigantic scheme which will do much to develop the group of mines at Silver Plume, by running a large double-track tunnel, 8 × 9, 2000 feet to cross-cut this property. It will tap the main vein at a depth of 1600 feet from surface and 400 feet below present workings. It will also tap the Dunkirk and other properties. A large air compressor, 20 × 24, is being put in by the creek and run by water power, which carries air 2000 feet to the mine to work machinery, etc. It will also furnish air for drilling the new tunnel.

CONEJOS COUNTY.

Natural gas was struck about seven miles north of Alamosa. The well is an artesian one and is drilled to a depth of of 235 feet. The casing is too thick. The gas and water are admitted together and as soon as the gas is strong enough it forces the water back. In all probability a test-well will be drilled at once.

DOLORES COUNTY.

GRAND VIEW MINING AND SMELTING COMPANY.—The preparations for blowing in the furnace at the Grand View smelter are nearly completed and everything about the smelter has been put in first-class condition.

EL PASO COUNTY.

Messrs. Carnes and Shankling, two Missouri gentlemen, recently purchased several hundred acres of valuable coal land in the vicinity of Franceville, twelve miles east of Colorado Springs. The Rock Island surveyors are now locating a branch to the coal beds from the main line. The owners of the land have purchased an extensive machinery plant and the mines will be fully and thoroughly developed.

GILPIN COUNTY.

A correspondent sends us the following:

The gold mines of Gilpin County are still holding their own, both in gross yield and in profitable returns, and this after nearly thirty years of constant workings, as the first discoveries were made in 1859.

The most noteworthy paying mines are the Grinnell, $10,000 to $15,000 per month. The Whitey, $5000 to $10,000 per month. The Hubert, $6000 per month. They have done the same for over three years past. The Saratoga, $8000 to $10,000 per month. The Fiske, $5000 to $6000 per month. The Alps, $2000 per month. The California, $3000 to $5000 per month, and others paying lesser amounts, among which are the Trio Topeka, Leavenworth, Egyptian, San Juan, Pyrenees, Iron-Aududdle, Frontenac, Searle-Ivanhoe.

A very decided improvement in the method of handling the ore was inaugurated last year by the building of a 24-inch steam tramway, having 35 pounds iron rails and running eight-wheel cars, which carry one cord of ore, the cord being an entirely local usage and weighing about eight tons. These cars are made of ¼-inch mild steel, with hopper bottoms, and stand only four feet above rails, although using a 20-inch chilled wheel. The ore is either shoveled or dumped into the cars at the various mines. Then once a day the locomotives gather up the various trains and take all the ore down the grade to Black Hawk, where the stamp mills are situated. The next morning the cars are taken to their respective mills and there dumped from a trestle on to the feed floor in front of the stamps.

The Tramway Company's hauls are much cheaper than the former way of hauling by mule teams, besides saving a great deal of wear and tear on the roads. The company is hauling about 150 tons per day, and as soon as several branches are completed, making a total length of track of 15 miles, about 300 tons of ore will be hauled down to the mills, and about 30 tons of coal up to the mines.

Altogether Gilpin County is in a very prosperous and substantial condition, and the investment of $100,000 by local capitalists in this railroad enterprise is ample proof of the cheerful outlook.

LAKE COUNTY.

From the Leadville *Herald-Democrat* we take the following:

The price of lead continuing so low, the miners of Carbonate Hill are not now shipping one-half the amount of ore that is their regular output. The Leadville Consolidated is not now shipping any ore at all, and the Pocahontas has not yet began to produce much. The Big Chief and Castle View are both shut down. The cause for the latter is said to be some trouble in the Castle View Company. The Catalpa is shipping a small amount of iron, and the Evening Star a great deal, nearly 75 tons per day—to fill a large contract with the Pueblo smelter. The Morning Star is not producing at all, except the ore taken out in the course of development work, and the output of the Henriett and Maid at the present time is but one-fourth of what it was three months ago.

ADAMS MINING COMPANY.—The company is producing and shipping about 30 tons of ore per day, the total amount being hoisted through the Brookland Discovery shaft. No hoisting whatever is being done through the upper or Brookland shaft. The mill, also, is shut down, and has been for some time past, owing to the low price of lead. Development work and prospecting is being pushed ahead underground as usual, and a large body of ore is being opened in the second contact ore shoot.

AGASSIZ CONSOLIDATED MINING COMPANY.—The company is shipping but about 20 tons of ore per day from the Wolfetone mine, it also having reduced its rate of ore shipments on account of the low price of lead. The concentrating mill, however, is kept in operation, and is doing its usual successful work. The company is now considering the erection of a new concentrating mill, especially designed for dressing the sulphide ore of the mine. If it is finally decided that a new mill of this kind shall be built it shall be a large one, of probably from 150 to 200 tons per day capacity. In the Wolfetone mine are enormous bodies of low-grade sulphide ore, and a new mill of the kind proposed is almost a necessity. Some time ago a trial run of the low-grade sulphide ore was made in the present mill, and the result was very satisfactory. Development work is going on as usual in the mine.

OURAY COUNTY.

AMADOR-LILLA MINING COMPANY.—This company, having acquired possession of the San Antonio and Pagosa claims, parallel to and adjoining its property, has started a cross-cut from its Lilla level to intersect these veins at a depth of over 200 feet. The cross-cut will be from 300 to 400 feet in length and will cut the Saxon vein also in its course, thus tapping three rich veins, all of which can be developed to advantage from the Amador-Lilla main workings and making a most valuable group of mines.

PITKIN COUNTY.

The mine managers at Aspen have arranged a new schedule of wages. It was to go into effect on the 16th, the prices to be $3 for eight hours and $3.50 for ten-hour shifts, with $3 for top men.

SUMMIT COUNTY.

ROBINSON CONSOLIDATED MINING COMPANY.—It is reported that an important strike has recently been made in the G. B. R. claim, belonging to this company. The G. B. R. is located on Sheep Mountain, considerably above the main workings of the Robinson mine and near the outcrop of the vein. The new strike was made by a party of lessees who drifted in at the outcrop and encountered the ore near the surface. This body of new ore is thought to be part of an entirely new ore-shoot. The company expects to commence shipping immediately at the rate of 30 carloads per month. The strike which was made in the lower levels of the Robinson mine in February did not prove up the expectations of the management of the mine.

CONNECTICUT.

NEW ENGLAND COAL COMPANY.—This company has been organized in Hartford, with a cash capital of $10,000. The stockholders and directors are Albert S. Swords, of Stamford, President; Joseph D. Dickson, of New York, Treasurer; Joseph F. Swords, of Hartford, Secretary and Assistant Treasurer.

DAKOTA.

LAWRENCE COUNTY.

SEABURY-CALKINS MINING COMPANY.—Shipments of ore are now being made to Omaha. A twenty-five foot body of dry ore assaying $35 in gold, has recently been encountered in the mine. The ore is between well defined walls, and looks very similar to that found in the Mutual about one year ago.

GEORGIA.

A correspondent sends us the following from Bowden, Carroll County:

Mineral matters are looking up a little in this part of the world, especially gold.

The May Virginia, at Talladega, is showing up well. The Holland mine, at Tallapoosa, has been running about forty days with their new 20-stamp mill, but do not know the results. A Birmingham company is developing the Arbacooche property. A northern company are at Pimtucky. We are working away at the placers at Gold Ridge, etc.

Just why this region has so long laid dormant for want of capital is a puzzling thing to me, for there are a dozen good properties that can be had for a mere song, and on which the surface has merely been scratched. Some of them were worked before the war down to water level, and then abandoned for want of suitable appliances for pumping.

With cheap labor, and cheap and abundant fuel, this country presents advantages equalled by few and surpassed by none for large permanent veins—low grades, it is true—but easily worked, and affording such a chance for profitable investment as I have nowhere else seen.

PICKENS COUNTY.

GEORGIA MARBLE COMPANY.—This company has, since its organization, expended nearly six hundred thousand dollars at its quarry and in carrying on its operations. Within the past six months, it has erected on the premises a twenty-four gang mill. The present capacity of the quarrying machinery of the company is 25,000 cubic feet per month. This will be increased

shortly to meet the constant demand for supplying the marble.

IDAHO.

ALTURAS COUNTY.

PRIDE OF IDAHO.—The second payment on this mine has been made, and $25,000 out of the $40,000 agreed upon has been paid. The third payment will be due the first of October, and the fourth the first of January next. Very little ore is being extracted as the property is being opened up so as to work it to the best possible advantage. There are 18 tunnels in the claim, which have a length varying from 300 to 375 feet.

INDIANA.

The Miners' Federation will meet in Terre Haute the latter part of this month in annual convention. The meeting will be one of the most important ever held in the history of the Federation. The meeting will amalgamate more closely the machine miners and the pick miners,of which the Miners' Association was originally composed. There will probably be considerable discussion in regard to the scale for next year. The pick miners will not encounter much difficulty in an adjustment of the scale, but the agreement now existing between the machine operators and miners may be subjected to some changes.

ILLINOIS.

CONSOLIDATED COAL COMPANY.—At the second annual meeting of this company, held recently in St. Louis, it was shown that the net profit derived from business, after providing for the interest on bonded indebtedness, also for the cost of coal rights worked out and the sum of $7000 as preliminary and organization expenses, has been $331,113.83. The following gentlemen were elected directors for the ensuing year: Messrs. Daniels, Simpson, Ridgely, Cutts, Devoy, Donk and Orthwein.

IOWA.

The production of coal for the fiscal year ending in 1887 amounted to 3,864,490—an increase of 11,116 tons as compared with the same period in 1886, and an increase of 281,834 for the same period in 1885

The new law regulating the coal industries of this State is making a good deal of trouble among the operators and miners in and about Centerville. The main difficulty seems to be in regard to the screens and the weighing of the coal before it is screened. Nearly all of the Centerville collieries being supplied with track scales, and as has always been the custom heretofore, the coal is weighed before passing over the screen, the operators desire that this custom still continue, and in order to do this they have blank contracts which the miner is asked to sign, which is in substance that each individual miner will permit the coal mined by him to be weighed as heretofore. In many parts of the State this contract is being signed and the coal works are going ahead without much friction from the action of the new law. But the miners here refuse to sign the contract and work all along the line is suspended.

MICHIGAN.

COPPER MINES.

Since the publication of the Boston *Transcript's* tables of the production of mineral by the Lake Superior copper companies for June and the first half of the current year, as published in our last issue, it has received corrected figures together with the returns from the Central and Copper Falls mines, which complete the list of producing mines :

	June.		Jan. 1 to June 30.	
Mines.	1888. Tons.	1887. Tons.	1888. Tons.	1887. Tons.
Calumet & Hecla.	2,542	2,997	13,525	16,539
Tamarack.....	640	350	3,760	1,837
Quincy.....	342	210	1,927	1,371
Atlantic.....	222	202	1,397	1,226
Osceola.....	208	166	1,251	932
Franklin	182	261	1,080	1,204
Huron.....	118	..	727	380
Copper Falls	84	71	326	440
Central.....	67	86	544	624
Total 9 mines...	4,405	4,283	26,537	24,553

CALUMET & HECLA MINING COMPANY.—The company is hoisting rock from the stopings of the twenty-fourth and twenty-fifth levels of No. 3 Hecla shaft. The resumption of work at the main mine shafts therefore has begun and a decided gain in output may be expected for the last half of the year.

CLIFF.—The sale of this mine is reported by the Calumet *News*. It is said that Mr. A. P. Thomas is to be the coming agent of the new company, and that Mr. Simpson, the late owner, is to take an interest in the concern.

KEARSARGE MINING COMPANY.—The rock-house at this mine is expected to be in running order by August 1st, when the shipment of rock to the Osceola mine will commence, and the Kearsarge will be on the list of producing mines.

RIDGE COPPER MINING COMPANY.—The mill is ready to start up. It will be in charge of Mr. Ed Trevillian, an experienced copper dresser of many years experience at Portage. Hoisting rock from the mine has commenced. It is stated that negotiations are going on by which it is confidentially expected that capital will be furnished to work the mine actively in the fall.

IRON MINES.

FLORENCE.—The engine house at this mine was totally destroyed by fire on the 13th inst. It contained about $75,000 worth of machinery. The building and machinery were insured for $14,000, which, it is believed, will cover the loss. Temporary boilers have been procured so as to keep the mine free from water. As soon as the air compressor is working, hoisting will be resumed.

RIVERSIDE MINING COMPANY.—This company has been organized to carry on operations on lots 1 and 2, section 35, about three miles in a direct line northwest from the village of Republic. Officers of the company are as follows: President, D. McCarthy; Secretary and Treasurer, Jas. O. St. Clair. The vein which is being wrought by this company was found some time since by Capt. Ryan, who has carried on development work since last fall. A shaft 8 by 10 feet has been sunk to a depth of 80 feet, meeting 35 feet of sand drift and then the ore. The vein where first encountered shows a width of about four feet and has grown to about ten feet in the bottom of the level. The ore is coarse granular, magnetic, of excellent quality, numerous assays showing it to carry metallic iron from 66 to 69 per cent, with phosphorus ranging from .018 to 1. The phosphorus is very irregular, so much so that the company can not guarantee it a Bessemer, in this respect it acting exactly like the black ore of the big Republic mine. The ore will be a salable one. It is easy to break in the stope, coming away in large blocks, and makes heavy floors, indicative of strength and continuance. There are now in stock pile, so Mr. St. Clair figures, about 3000 tons. The fee of the property is owned by the Michigan Land and Iron Company, the royalty being regulated by a sliding scale, which will make this ore about 35 cents per ton, probably.

At most of the iron mines in the vicinity of Ishpeming cut in wages has been made. Miners receive 20 cents per day less than formerly, underground laborers 10 cents, surface laborers 5 cents.

WHEAT MINING COMPANY.—In the case of Richard Luke against this company, the Supreme Court has asustined the decision rendered in the Marquette Circuit, by which the plaintiff receives $2500 damages. Luke, an old man, was caught by a skip in a cut through which he had to pass to reach the surface, and had a leg taken off. The evidence showed some negligence on the part of the mining captain in not warning the defendant of his danger.

MONTANA.

The Montana Central Railway Company has opened a quarry of brown stone, six miles from Great Falls on the Sand Coulee branch. This stone has been put to several analytical and practical tests, which have proven most satisfactory, and it is considered a good building stone. A rate of $2 per ton has been put on this stone from the quarry to Helena, which will make it almost as cheap as brick for building purposes.

LEWIS & CLARKE COUNTY.

BOURBON MINING COMPANY.—This company has been organized with a capital stock of $875.000 by Samuel T. Hauser, John T. Murphy, Anton M. Holter, A. J. Seligman and Carter Baker. The object of the company is to prosecute the business of mining and reducing gold, silver and other ores.

DENVER & HELENA MINING AND MILLING COMPANY.—This company has been organized with a capital stock of $500,000. The object of the company is to acquire and operate mines and all things incident to such business in Lewis & Clarke County. The directors are Frank C. Harris, F. Brinker, Susan Holsinger, Cyrus Faulk, Alonzo B. Ullery, Edward Higgmbotham. The principal place of business is Denver, Colorado. Augustus L. Brown is the Helena agent.

MONTANA COMPANY LIMITED.—Official reports to us state that the production for June amounted to $70,300 and the working expenses to $43,700.

PARK COUNTY.

QUEEN ESTHER MINING COMPANY.—This company, which was recently organized, has purchased the Clima, Orient and Hecla lodes, situated in the New World mining district. These three claims adjoin each other and embrace a surface 600 feet wide and 4500 feet long.

SILVER BOW COUNTY.

AMY & SILVERSMITH MINING COMPANY.—Operations have been suspended.

ANACONDA COMPANY.—The company has begun to work at the two mines on the lowlands north of Walkerville, bonded some time ago. The consideration in one of these bonds is $100 000.

GREEN MOUNTAIN.—One of the largest shafts being sunk in the Butte District, says the *Miner*, is that on the Green Mountain, situated midway between the Mountain Consolidated and Wake-Up Jim. At present it has attained a depth of 200 feet. Three eight-hour shifts of eight men each are at work on it. When the shaft has been sunk to the required depth the largest pump in the camp will be erected, as well as the largest hoisting works in Montana, which will be capable of hoisting all the ore from the Mountain Consolidated, Wake-Up Jim, and Green Mountain.

NEVADA.

ELKO COUNTY.

COMMONWEALTH MINING COMPANY.—The Navajo-Independence mill started up on the 9th inst. on ore from the Commonwealth, and will continue long enough to put this company in funds sufficient to pay for its new mill and other expenses for the balance of the year. The pulp assay of the ore is said to be $500 per ton. This is the second-class ore which is being taken from this property.

STOREY COUNTY—COMSTOCK LODE.

We take the following from the Virginia City *Chronicle;*

The rapid shrinkage of the Carson River flow has entailed a general hanging-up of stamps in mills operated by that stream,

CONFIDENCE MINING COMPANY.—The auxiliary steam power at the Brunswick will be brought into requisition to keep the full complement of stamps in operation on Confidence ore. The total bullion yield of the mine in June was $132,933.38—nearly $40,000 less than that of May, due to a falling off of nearly $10 per ton in the assay value of ore extracted in June below that of the month previous.

CONSOLIDATED CALIFORNIA & VIRGINIA MINING COMPANY.—The official report for June shows that the total product for that month was $405,834.08. There was worked at the Eureka and Morgan mills during this month 13,030 tons of ore. The gold contained in this bullion was valued at $197,935.29 and the silver at $207,898.79, the proportions being unusually even. The average yield of the ore per ton in bullion was $31.14 and the average assay value was $36.92 per ton. The 80 stamps in the California mill will be ready to drop on Consolidated California & Virginia ore by the 1st of August to replace those hung up in the Eureka. The hanging up of stamps in that mill will probably reduce the bullion yield of the mine for the current month to one half of that of June, but there is a surplus in the company's treasury ample to pay the July dividend and to leave a round sum to carry over to the credit of the August account.

GOULD & CURRY MINING COMPANY.—The test run of Hully's Six-Mile Cañon mills on fillings from the workings of this mine, thrown over the waste dump on account of its being too low grade to be profitably handled by the company, has proved satisfactory. We referred to the ore fillings in our last issue. The two mills crush about 20 tons daily on an average. This could be increased to 30 tons if the pan room in the mills was adequate to handle that amount of pulp. There is a large amount of these low-grade fillings on the waste dump, and it is presumable that the pan capacity of the two five-stamp mills will be increased.

HALE & NORCROSS MINING COMPANY.—Negotiations are pending for 20 additional stamps to crush Hale & Norcross ore to supply the place of those hung up in the Mexican.

WASHOE COUNTY.

The interest in the Jumbo District locations continues and the work of development is being vigorously pushed in the Wild Goose and Willis mines, to which we referred in our last issue, and several stringers of gold-bearing quartz have been found. Two test runs have been made on Wild Goose ore at the Fisher mill in Six-Mile Cañon, the result of the last being sufficiently satisfactory to prove that much of the ore extracted in explorations could be profitably handled if a stamp-mill is erected in the district.

OREGON.

DOUGLAS COUNTY.

PORTLAND CEMENT COMPANY.—This company's plant is situated at Oregon City and has a daily capacity of 100 barrels. The arrangements for beginning active operations are almost completed. The rock, which is transported from the quarry near Oakland, is being crushed. There are now at the works twelve or fourteen cars loaded with rock, and when operations are fully commenced it will be brought in as fast as required. The retort is complete, but the roasting process cannot commence until the brickwork is thoroughly dry. Within thirty days, or probably less time, the product of the works is expected to be placed on the Portland market.

PENNSYLVANIA.

The work of drilling a test well for gas and oil at Donny's Run, in Clinton County, has been abandoned, after reaching a depth of 3885 feet.

COAL.

According to reports, a large bed of coal has been discovered at the old Stark Tunnel, at Big Vein, Schuylkill Valley. It was discovered in a place where it was least expected, and the find has created great excitement in mining circles.

The Dunn Breaker, and almost all the buildings connected therewith, at Old Forge, were burned on the night of the 17th inst. The loss is $100,000. The timbering of the shaft took fire, and the flames spread to the foot and set fire to the inside. The property is owned by John Jermyn & Co.

ENTERPRISE.—This old mine, at West Elizabeth, is about to be abandoned. This is said to be the oldest mine in the Monongahela Valley, having been opened in 1842.

Col. W. P. Rend, the coal operator of Chicago, it is reported, has made another large purchase of coal land, which will be opened and operated in connection with his extensive coal works at McDonald station, on the Pittsburg, Cincinnati & St. Louis Railroad.

MIDDLE CREEK.—A terrific fire was raging in Breast No. 52 of the West Buck Mountain gangway, at this colliery, at Donaldson, on the 19th inst. In attempting to fire a shot a feeder of gas between the coal was ignited and rapidly burned until the main body of gas was reached. No explosion has yet occurred, and the entire force of employés are drowning the breast.

NATURAL GAS.

The Attorney of Allegheny City has filed his opinion as to the power and duty of councils in the matter of regulating natural gas rates. He advises co-operation with the citizens, and that a test case be taken into court to establish the legality and status of the city's rights.

LEWIS RUN GAS COMPANY.—The company has now a 150-pound pressure well, two miles back of West Elizabeth and two miles from the big gushers at

Cochran's Station, on the Baltimore & Ohio Railroad. The intervening territory is almost all under lease to the Philadelphia and other companies. The Lewis Run will be drilled deeper.

OIL.

Exports of refined, crude, and naphtha from the following ports, from January 1st to July 14th:

	1888. Gallons.	1887. Gallons.
From Boston	1,586,364	2,665,550
Philadelphia	59,667,522	81,566,287
Baltimore	3,641,852	4,314 170
Perth Amboy	12,533,859	9,186,800
New York	184,533,904	194,173,963
Total exports	261,963,501	293,906,770

WASHINGTON REFINING COMPANY.—The first run of oil at the works of this company, at Washington, will be made about August 1st. The works will commence operations with a capacity of 8,000 barrels a week, and that output will be doubled at once. Every product of crude petroleum will be manufactured. The plant consists of four 600-barrel stills, a battery of boilers of 400 horse-power, a condenser 150 × 20 × 8 feet, twelve distillate tanks of 1,275 barrels each, three bleaching tanks of the same size, a 2,500-barrel tank for lubricating, a 30,000-barrel tank for crude, a cooper shop, which will employ from 60 to 80 men, a gasoline plant, etc. The capital stock of the company is $150,000. E. Kells, an old refiner, is superintendent of the works.

SOUTH CAROLINA.

The following shipments of land phosphate rock from Charleston during June are reported by Mr. Paul C. Trenholm:

	1887. Crude. Tons.	1887. Ground. Tons.	1888. Crude. Tons.	1888. Ground. Tons.
To domestic ports	19,505	330	16,497	....
To foreign ports	510	...	.....	....
Total	20,015	330	16,497	....

The following statement of phosphate shipped from and consumed in South Carolina in 1887 has been prepared by Mr. P. C. Trenholm, of Charleston:

	Domestic.	Foreign.	Total tons.
From Charleston	181,918	9,740	191,658
From Beaufort and vicinage	15,905	189,995	205,900
Estimated consumption at Charleston			70,000
Estimated consumption at Beaufort			13,000
Grand total shipped from and consumed in South Carolina in 1887			480,558
Grand total shipped from and consumed in South Carolina in 1886			430,549
Increase in 1887 over 1886			50,009

Estimated consumption increased 14,000 tons.

Decrease in shipments from Charleston, 1826 tons, and increase from Beaufort and vicinage, 37,835 tons.

Charleston shipments—Decrease, domestic, 5640 tons; increase, foreign, 3814 tons.

Beaufort shipments—increase, domestic, 1283 tons; increase, foreign, 36,552 tons.

Crude rock shipments from Charleston increased in 1887, 1554 tons.

Ground rock shipments from Charleston decreased in 1887, 3380 tons.

NOTE.—Ninety-nine per cent of the shipments from Charleston is "*Land*" rock, and from Beaufort and vicinage is all "*River*" (and marsh) rock.

UTAH.

The Salt Lake *Tribune* of the 14th inst. states that there has been a rumor about town that the local smelters were about to shut down, because the falling off in the price of lead and its uncertain future was resulting in such a decrease in production that the smelters were about out of ore.

DICKERT & MYERS SULPHUR COMPANY.—The stockholders have had several meetings in New York for the purpose of settling the existing difficulties referred to in our issues of June 30 and July 14, but so far have come to no arrangement. It is stated that there was no necessity for levying an assessment, as the company has sufficient sulphur on hand ready for the market to meet pressing obligations. Mr. Daniel Myers stated to a representative of the New York *Oil, Paint and Drug Reporter* that his suit against the company has no relation to the assessment, that he only wanted to protect himself by getting judgment, which can be satisfied in the future. Mr. Myers denounced as false the insinuation that stock in the company was sold under misrepresentations, as he firmly believed it to be non-assessable and is of the same opinion still.

WEST VIRGINIA.

HUNTINGTON & GUYANDOTTE RIVER RAILROAD COMPANY.—This company has been organized with the following officers: J. L. Caldwell, of Huntington, President, and Edward Haley, of Philadelphia, Secretary and Treasurer. The road which this company proposes to build has its starting point at Huntington, and will run up the Guyandotte River to Logan Court House. It is intended to open up an extensive region of coking coals. Since it appears to be a settled fact that the western extension of the Norfolk & Western will run down Big Sandy River, the Guyandotte River road will have a region entirely to itself, while there may ultimately be a connection between it and the Norfolk & Western in McDowell County or some nearer point to Logan Court House. The Ohio River Railroad has surveyed routes along the Sandy, Guyandotte, Mud and Twelve Pole Rivers, and will shortly reach into the mineral districts in the mountains.

FOREIGN MINING NEWS.

CANADA.

PROVINCE OF ONTARIO.

Our correspondent sends us the following from the district of Algoma:

American and English capitalists are becoming interested here. A railway is wanted urgently. The Dominion Government has granted $300,000 towards its construction, but so far without attracting the right men. The charter is owned, it is alleged, by "local speculators." Mr. Smith, Civil and Mechanical Engineer of Colorado and Philadelphia, is visiting our mines.

BADGER.—Under management of Mr. Hubert Shear, this mine is turning out ore of extraordinary rich quality, both in argentite and native silver—the latter prevailing.

BEAVER.—Manager Hooper has returned. The new hoisting machinery is now in motion, and work resumed at bottom of "No. 2," where a rich strike of native has been made. The other workings also produce rich ore, and all is serene here.

BURNETT.—Mr. Falco is opening this claim. There is silver in sight. A road is being cut out.

CARBON.—Capt. Rothwell's efforts have at length been rewarded by a strike of pay ore on the morning of the 14th inst. The Carbon is owned in Michigan by Buranger & Sibley. Capt. Rothwell, a well known mining and civil engineer, is manager here.

OTTAWA MINE.—This mine, situated "R 238," east and west. Capt. Ed. Watt is developing here ore chiefly argentite and leaf, with argentiferous blende, assaying 511 ounces.

PORCUPINE.—"*Statu quo*" expresses the position of this doubtless fine property.

SILVER MOUNTAIN—EAST END.—Captain Trethewey is quite elated, having struck a rich (though small) streak of high-grade ore in both shaft and east and west drifts, at a depth of 370 and 400 feet. They also found the extension of the main lode east. The vein is, in this direction, most erratic in its course. It carries a 5-inch pay streak, however, and gives great promise. Its width will average 9 feet 6 inches.

SILVER MOUNTAIN—WEST END.—This new company (from Colorado), under the direction of M. Falco, M. E. and H. K. Nichols, its practical managers, is in full blast. "Colorado Avenue" and "Chicago Streets" are built. In clearing for Shaft House, the vein was cut through, showing up rich in sulphides, leaf and native; while test pit "No. 1" produces a really fine display of rich ores.

SILVER GLANCE.—The sale of this and the "Wolverine" lode was confirmed by cablegram of this day, to a London syndicate. Active work to begin early.

CENTRAL AMERICA.

SALVADOR.

A correspondent sends us the following: A few days ago I had an opportunity to see a report of the Devisadero Gold and Silver Mining Company, formed by Mr. W. Morgans, M.E., of London, which speaks very favorably of the property of the company, its future output and development. I am unable to judge of the entire reliability of this report, but hope that its statements may be realized. Some time ago it was announced by its proprietors, Messrs. S. & T. T. Auerbach, and Jose Miguel Macay, formerly of San Miguel, Salvador, that an English company had taken hold of the property, but up to date this does not seem to be the case; nevertheless, the mine and machinery are still at work.

Near this camp is situated the once productive "Lorna Larga" mine, no longer in operation, of which a Mr. Alfred Morgans is superintendent. I am not acquainted with the exact reason for stopping, but it would seem that much more had been expended upon the mine than the returns would warrant. Although new boilers, batteries, pans and concentrators (true vanners) have been put in place during the past year, the manager found it impossible to keep the mine in operation, and I am informed that the owner, Mr. Padilla, of La Union, had to suspend payment because of the tremendous expenditures. The superintendent, Mr. A. Morgans, and his assistant, the mine inspector, and the book-keeper have been keeping guard over the property for the last four or five months. Those who know the property are well aware that the vein is good, and do not doubt that, with proper management, the mine will yield as good returns as before.

The Tabanco and Encuentros mines, formerly operated by a French company, of Paris, have been sold by them to Mr. Jose Miguel Macay. The former has been shut down for more than four years, but the latter is now worked with some success by its purchaser.

The San Sabastian Gold Mining Company, of New York, is now hard at work with satisfactory results, using up twenty tons of ore daily by the chlorination process, the rock first being crushed by two 5 feet Huntington centrifugal roller quartz mills.

In the neighborhood of these principal mines are a number of very good gold and silver veins and prospects. The best of these are the Santa Rita, near the San Sebastian, operated by the lately formed Santa Rita Gold Mining Company, New York; the Recreo Gold and Silver mine, near Encuentros, owned by Augustin Schulz, of San Miguel; the Los Santos, a free gold mine, owned by Mr. Hegg, assayer and chemist of San Miguel; the La Trinidad and San Bartolo, near Santa Rosa, both owned by Dr. Antonio Claros, of that city. All these mines promise to realize the hopes built upon them, the ores from all having given by assay a high average value of precious metals.

The Chamber of Deputies of this republic in their last session made a decision of great importance to mine owners by abolishing the taxes upon transfers of mine property, which formerly amounted to five per cent of the purchase price. They have also removed the duties upon all kinds of imported mining machinery and implements.

M. H.

COAL TRADE REVIEW.

NEW YORK, Friday Evening, July 20.

Statistics.

Production Anthracite Coal for week ended July 14th and year from January 1st:

TONS OF 2240 LBS.	1888. Week.	1888. Year.	1887. Year.
P. & Read. RR. Co.	144,422	2,962,408	4,129,114
Cent. R. R. of N. J.	145,675	2,728,166	2,615,737
L. V. RR. Co.	219,899	3,283,764	3,799,064
D., L. & W. RR. Co.	115,184	3,296,010	2,783,799
D. & H. Canal Co.	83,343	2,202,710	1,961,242
Penna. RR.	69,170	2,091,582	1,627,740
Penna. Coal Co.	37,873	819,288	745,672
Penna. Canal Co.	16,097	196,637	168,433
Total	831,663	17,580,965	17,830,801
Decrease		249,836	
Increase			

The above table does not include the amount of coal consumed and sold at the mines, which is about six per cent of the whole production.

Production for corresponding period:

1883.....14,712,252 | 1885.....14,633,153
1884.....14,846,661 | 1886.....15,903,758

Production Bituminous Coal for week ended July 14th, and year from January 1st:

EASTERN AND NORTHERN SHIPMENTS.

	1888. Week.	1888. Year.	1887. Year.
Phila. & Erie RR.	655	33,666	6,829
*Cumberland, Md.	62,860	1,843,841	1,503,418
Barclay, Pa.	**4,500	98,567	110,411
Broad Top, Pa.			
H. & Broad Top RR.	**4,200	190,542	183,288
Clearfield Region, Pa.			
Snow Shoe	2,456	70,327	90,332
Karthaus (Keating)	3,553	79,668	100,087
Tyrone & Clearfield	66,884	1,827,462	1,727,734
Tipton	549	31,045	4,822
Alleghany Region, Pa.			
Gallitzin & Mountain	15,256	473,141	563,886
Pocahontas Flat Top Coal.			
Norf'k & West. RR.	33,422	851,200	618,547
Kanawha Region, W Va.			
Ches. & Ohio RR.	†29,015	963,450	738,778
Total	223,350	6,462,909	5,648,132

* Tons of 2240 lbs.
† Week ended July 7th. ** Estimated.

WESTERN SHIPMENTS.

Pittsburg Region, Pa.			
West Penn RR.	7,475	211,832	167,489
Southwest Penn. RR.	1,576	14,163	69,744
Pennsylvania RR.	3,074	161,034	115,713
Westmoreland Region, Pa.			
Pennsylvania RR.	31,491	929,003	29,830
Monongahela Region, Pa.			
Pennsylvania RR.	8,060	220,597	219,097
Total	52,276	1,536,629	1,367,405
Grand total	275,626	7,999,538	7,015,537

Production of Coke on line of Pennsylvania RR. for week ending July 14th, and year from January 1st, in tons of 2000 pounds: Week, 71,120 tons; year, 2,059,397 tons; to corresponding date in 1887, 1,721,902 tons.

Anthracite.

The anthracite business is very active at present and is likely to continue so through this month, and possibly through the beginning of the next, so far as deliveries are concerned. New prices practically do not come in force till next month, so that the trade is anxious to have all the coal possible delivered at the old rates while they last. Next month the trade will probably prove much less active; but experience having shown that it is unsafe to defer until the autumn laying in stocks of coal, it is possible that the demand will keep on at a fairly good rate. At present it is "booming."

The production of coal in June, as shown by the statistical tables annexed, was very heavy, 2,977,649 tons, being an increase of 266,940 tons over June of last year. It is clear from this that very little attention is paid to "quota," and it is understood that no question of the amount of coal to be produced in August has yet been raised. It would be just as well to say nothing about it as to fix upon a figure and then disregard it. The chief increase has been by the Pennsylvania Railroad, the Pennsylvania Coal Co. and the Lackawanna & Western. Every company, except the Reading and the Lehigh Valley, which were so long on strike, has largely increased its output this year; Lackawanna & Western more than half a million tons, the Delaware & Hudson 270,000 tons, and the Pennsylvania 442,000 tons. The output this year has already exceeded that of last year by more than a quarter of a million tons. This is an unanswerable demonstration of the general industrial activity of the country. Notwithstanding the large increase in output during June, the stocks of coal at tide-water decreased 70,000 tons, showing the very active delivery. During July they will still further decrease, but during August we expect them to increase again.

All sizes of coal, except pea and buckwheat, are in active demand; these are still a drug owing to the large production, which in turn is due to the light demand for furnace coal, obliging the companies to break up their lump coal and also to the inroads made by the bituminous coal in the anthracite market.

The representatives of the railroad companies, unexpectedly, have not advanced tolls for the present. The question probably was postponed to see how the market would stand the advance in price, which wil

take place in effect after the 1st of August, though nominally now in force. Several of the more experienced men in the trade believe that prices are quite high enough, and would like to keep them where they are to the end of the year. The "bulls," however, are in favor of advancing again in September or October.

The demand for anthracite in the West is extremely active, and the shipments there are limited only by transportation facilities. The experience of last winter has taught a good many of the Western communities a lesson, and they are laying in stocks early.

Prices for coal are as follows, f.o.b., New York harbor:

Broken, $3.85; Egg, $4.15; Stove and Chestnut, $4.50; Pea coal, $2.25@$2.40; Buckwheat, $1.85@$2.10.

Mr. John H. Jones, Chief of Bureau of Anthracite Coal Statistics, has issued the following statement of anthracite coal tonnage for the month of June, 1888, compared with same period last year. This statement includes the entire production of anthracite coal, excepting that consumed by employés and for steam and heating purposes about the mines, but does not represent the entire anthracite coal tonnage actually transported by the respective railroad companies, adjustment being necessary in the compilation to avoid duplications, etc.

COMPANIES.	June, 1888.	June, 1887.	Difference.
Phila. & Reading RR...	573,596	560,299	Inc. 13,296
Lehigh Valley RR.....	502,537	481,127	Inc. 21,410
Central RR. of N. J....	432,716	408,548	Inc. 24,168
Del., Lack. & West. RR.	488,283	455,316	Inc. 32,967
Del. & Hud. Canal Co..	291,652	266,331	Inc. 25,321
Pennsylvania RR.....	456,161	355,182	Inc. 100,979
Pennsylvania Coal Co.	155,558	117,700	Inc. 37,858
N. Y., L. E. & W. RR...	77,146	66,205	Inc. 10,941
Total	2,977,649	2,710,708	Inc. 266,941

COMPANIES.	For year 1888.	For year 1887.	Difference.
Phila. & Reading RR...	2,637,758	3,318,584	Dec. 680,826
Lehigh Valley RR.....	2,663,509	3,138,524	Dec. 475,015
Central RR. of N. J....	2,384,167	2,333,626	Inc. 50,541
Del., Lack. & West. RR.	3,076,453	2,553,910	Inc. 522,543
Del. & Hud. Canal Co.	2,035,146	1,765,050	Inc. 270,096
Pennsylvania RR	2,168,616	1,726,151	Inc. 442,464
Pennsylvania Coal Co..	742,830	675,321	Inc. 67,509
N. Y., L. E. & W. RR..	446,976	392,280	Inc. 54,697
Total.....	16,155,455	15,903,446	Inc. 252,009

	June, 1888.	June, 1887.	Difference.
From Wyoming Region	1,611,272	1,390,254	Inc. 221,017
From Lehigh Region...	488,593	503,741	Dec. 15,148
From Schuylkill Region	877,784	816,713	Inc. 61,071

	For year 1888.	For year 1887.	Difference.
From Wyoming Region	10,153,164	8,265,142	I. 1,888,022
From Lehigh Region..	1,819,123	2,889,005	D. 1,069,882
From Schuylkill Region	4,183,168	4,749,299	D. 566,131

The stock of coal on hand at tide-water shipping points June 30th, 1888, was 741,598 tons; on May 31st, 1888, 812,425 tons; decrease, 70,467 tons.

Bituminous.

This market is unchanged and presents no features worty of note. Prices remain nominally at $2.60 f.o.b. for Baltimore and Georgetown, and $3.25 for New York harbor. But they are still shaded by some of the companies, though it is said that the price has been advanced a little by some of those who were making the deepest cuts.

Boston. July 19.

[From our Special Correspondent.]

The Boston market for anthracite coal has improved considerably. Retailers seem to manifest a good deal of confidence in the situation, and have been, as usual, putting in their orders before the advance of 25 cents on stove, 15 cents on egg and 10 cents on broken, which every one is anticipating, with the further expectation that it will be sustained.

The activity in anthracite furnishes about all the life there is to the coal trade at this port just at present, as the bituminous transactions are very slight. There is no outward ripple of trouble in the bituminous pool circles and quotations remain nominally at $2.50@$2.60 f.o.b., with plenty of parties willing to sell or "guarantee" delivered cargoes on fully as favorable terms.

After long waiting there does seem to be an increase in vessels at some of the ports, and advantage of the weaker rates is taken to move a large amount of coal. The lower ports all report more vessels than for a long time.

We quote vessel rates, exclusive of discharging: New York, 70@80c.; Philadelphia, 85@90c.; Baltimore, $1@$1.05; Newport News and Norfolk, 85@95c.; Richmond, $1.15@$1.25; Provincial, $1.60@$1.75.

The retail trade is just now very active, as it usually is just at this time before people go away on their vacation. Every thing is lovely save in one respect, there is always something out of course. This time it is the new rules which require dealers to charge 25 cents extra per ton when delivering beyond a certain limit. The idea is good, but its application appears to be faulty in the view of some dealers, and the coal trade association is understood to have had a narrow escape from serious troubles over the rules. They have been patched up once or twice, but whether a lasting peace has also been patched up remains to be seen.

The report that Geo. B. Newton is backing the Boston Coal Company, the independent concern, which took the best of the city contract by violating rules of the trade as to delivery, is denied by Newton's Boston agent.

We quote retail prices, 2000 pounds to the ton, delivered, as follows: Stove, $6; Nut, $6; Egg, $5.75; Broken, $5.50; Franklin, $7 25; Lehigh Egg, $6; Broken, $5.75. Wharf prices are 50 cents less than the above. Bituminous coal retails at $4.25 on the wharf.

New and advanced pocket prices may be expected right away.

The State house contract for 500 tons broken coal was awarded at $5.20, delivered.

Buffalo. July 19.

[From our Special Correspondent.]

The advance in coal at eastern points has not been duplicated here. Quotations unchanged and trade without new features. Housekeepers are stocking up their bins with winter supplies, and a fair degree of activity is manifested in consequence. Consumers of natural gas for fuel continue to take the article, and are willing to run any risks, if any prevail now, sooner than discontinue its consumption. The steady increase in our city's population and residences fully makes up for any loss that this gas causes in the coal trade, therefore no particular harm has befallen the dealers in the mineral product. Complaints are made of scarcity of cars.

The bituminous trade improving; greater degree of firmness in prices manifested and a consequent less disposition to force sales. Quotations given are still unreliable; special bargains being the order of the day. The railroad tracks are less encumbered with cars awaiting sales of their contents.

Lake freights lower to leading Western ports, the result of light supply of coal and the arrival of numerous vessels overstocking the market. The shipments by lake, westward, covered very many points, and from July 12th to 18th, both days inclusive, were as follows, aggregating 81,780 net tons: 22,290 to Chicago, 11,000 to Milwaukee, 18,710 to Duluth, 6900 to Superior, 1350 to Green Bay, 2950 to Racine, 400 to Bay City, 700 to Kenosha, 700 to Port Huron, 650 to Marinette, 520 to Detroit, 1750 to Sheybogan, 500 to Saginaw, 450 to Manitowoc, 550 to Portage, 1020 to Hancock, 600 to St. Clair, 1900 to Washburn, 640 to Menominee, 200 to Pt. Clinton, 2700 to Griffin, 800 to Sault Ste. Marie, 1450 to Marquette, 750 to Marine City, 2300 to Gladstone.

Total shipments thus far this season (including vessels from Tonawanda not reported at Custom House), 1,009,825 net tons. The rates of freight were as follows: $1@85c. to Chicago, 90@80c. to Milwaukee, 50c. to Detroit, Port Clinton, Marine City, Port Huron, St. Clair, Toledo and Saginaw; 75c. to Washburn, Hancock, Menominee, Ashland, Gladstone, Portage and Marquette; 75@65c. to Duluth and Superior; $1 to Kenosha and Racine, 90c. to Sheboygan, Green Bay and Manitowoc; 85c. to Marinette, and 40c. to Bay City, closing this morning unsettled, shippers desiring a further decline, but vessel brokers unwilling to make any concession either at present or for future engagements.

Receipts of coal by canal for second week of July at Buffalo 3600 net tons, shipments 449 net tons. The bad break at Adams Basin, near Rochester, has stopped navigation for several days, and the fresh break, which occurred Sunday last, cannot be repaired until Saturday. There are many coal boats behind Adams Basin, so that quite a heavy tonnage may be expected here early next week, which will help in a small degree, however, the trouble of the short supply which exists for shipping and local delivery.

No canal freights on coal. The two loads shipped were on owners' account, and in consequence no figures obtainable.

Make a note of this. Our new City Directory is out, and from data furnished the population now is 258,560. How much of this increase is attributable to our enlarged and still responding coal trade?

Pittsburg. July 19.

[From our Special Correspondent.]

Coal dealers report a fair trade demand. The July coal run reached 12,004,000 bushels; in last week's estimate we came within 4000 bushels of the amount. The supply in the Western markets is ample to last until the first of the new year.

PRICE OF COAL PER 100 BUSHELS = 7600 LBS..

First pool.....	$4.75	Fourth pool.....	$3.25
Second pool	4.25	Railroad coal.....	5.00
Third pool.....	3.75		

Connellsville Coke.—We have no improvement so far as prices are concerned, being disposed off below actual cost of production on account of no settlement being arrived at by coke manufacturers. The demand is improving, as consumers may never have such another opportunity to lay in supplies below actual cost.

Prices remain, Blast Furnace, $1 per ton; to dealers, $1.10; foundries, $1.15.

Freight rates to Pittsburg, 70c. per ton; to the Mahanoy and Shenango valleys, $1.35; East St. Louis, $3.20; to Cleveland, $2.80; to Chicago, $2.75; to all other points the same proportions.

Unless there is a compromise soon, a reduction in wages will soon follow.

FREIGHTS.

From Philadelphia to:—Alexandria, .85; Annapolis, .65; Bangor, 95*; Bath, Me., .95; Beverly, 1.05*; Boston, .87½@90*; Cambridgeport, Mass., 1.17½; Charlestown, .75; Charleston, .75@80: Com. Point, Mass. 1.00@1.05*; East Cambridge, 1.05; Fall River, 85@.90; Gardner, Me., 1.00*; Gloucester, 1.00*; Hingham, 1.50*; Lynn, 1.15*; Marblehead, 1.10*; Milton, 1.20*; New Bedford, .85@.90*; Newburyport, 1.15*; Newberne, .80; New Orleans, 1.25*; New York, .90†; Norfolk, .60@.65; Portland, .90*; Portsmouth, N. H., 1.00*; Providence, .85@.90*; Quincy Point, 1.05*; Richmond, Va., .75; Saco, Me., 1.15@1.25*; Salem, Mass., .90; Saugus, 1.15*; Savannah, .90@1.00; Washington, .85; Wilmington, N. C., .85.

From Baltimore to:—Bangor, Me., 1.00; Bath, 1.10; Boston, 1.00; Bridgeport, Conn., .85; Brooklyn, .85; Charleston, .75@.80; Fall River, .90; Galveston, 3.00; New Bedford, .85; Newburyport, 1.25@1.30; New Haven, .85; Lynn, 1.20; New London, .90; New York, .85; Portland, 1.00; Portsmouth, N. H., 1.00; Providence, .85; Quincy Point, 1.05; Richmond, Va., .60; Salem, Mass., 1.00; Savannah, 1.00@1.05; Somerset, .85@.90; Williamsburgh, N. Y., .85@.90; Wilmington, 1.00@1.10.

From New York to:—Bath, Me., 85*; Beverly, .85*; Boston, .80*; Bridgeport, Conn., .60; Cambridge, Mass., .80*3c; Cambridgeport, .80*3c.; Chelsea, .80*; Com. Pt., Mass., .80*; E. Boston, 80*; E. Cambridge, .80*3c.; E. Greenwich, R. I., .75; Fall River, .80 New Bedford, .85@.90; Newburyport, 95*; New Haven, .60; Newport, .75; New London, .70@75; Norwalk, Conn. .55@.60; Portland, .80*; Portsmouth, N. H., .90*; Providence, .75; Salem, .80*.

* And discharging. 3c. per bridge extra. † Alongside ‡ And towing.

MARKETS.

NEW YORK, Friday Evening, July 20.

Prices of Silver per ounce troy.

July	Sterling exchange	Lond'n Pence.	N. Y. Cents	July	Sterling exchange	Lond'n Pence.	N. Y. Cts.
14	4.88¼	42¼	92¼	18	4.88¼	*	91⅞
16	4.88¼	42¼	92⅛	19	4.88	*	91⅞
17	4.88¼	42⅛	92	20	4.88	42	91¾

*42 1-16.

Copper.—Since our last report the market has undergone no important change, the situation remaining practically the same and more than ever controlled by the syndicate. A further lot of spot copper was put on the market during the week, but the whole of it was readily absorbed. Speculators are not now putting out sales for the later months to the same extent as a month or so ago, as they see that the chances of being able to cover such sales without having to go to the representatives of the syndicate are very small if not altogether impossible, and to reckon on a collapse in prices, in view of the absolute control of the market by the syndicate and the financial strength of that body, certainly does not commend itself as a prudent operation. In addition to this, it may now be expected that the stocks of visible supplies (which have been rapidly accumulating during the past few months, and it is reported 4,000 tons during the past fortnight) will increase more slowly hereafter, as with the exception of the Calumet & Hecla, which is not yet turning out its normal quantity, all the other mines have brought their output up to their full capacity. Consumption also shows signs of improvement, again and this applies especially to copper for electrical purposes. On the New York Metal Exchange the business transacted during the week just closed has amounted to about 400,000 pounds in Lake descriptions, and the closing quotations for Lake brands and Spot, 16·75; July, 16·80; August, 16·75; September, 16·70; October, 16·60; November, 16·60; December, 16·50. Outside brands are also in somewhat improved demand at quotations ranging from 15 to 15¼.

The reports from the London market are also rather more encouraging, as consumers are showing a little more confidence in the future although still reluctant to pay present prices. During the week Spot Chili bars have advanced from £78 5s. to £78 15s. whilst 3 months futures remain unaltered at £78.

The exports of copper from New York during the past two weeks were as follows:

To Amsterdam—	Copper.		Lbs.	
By S. S. Zaandam.....	Casks.	120	150,000	$24,750
To Antwerp—	Copper.			
By S. S. Noordland.....	Bbls.	80	100,000	17,500
To Hamburg, old copper in transit—				
By S. S. Hammonia	Pkgs.	15	21,061	2,285
Old brass, in transit.				
By S. S. Hammonia. . . .	Pkgs.	3	1,392	61
Old copper, in transit.				
By S. S. Moravia.....	Hds. / Pkgs.	3 / 7	6,750	810
By S. S. Bohemia... ...	Casks.	180	234,115	37,459
To Havre—	Copper.			
By S. S. La Gascogne..	Casks.	40	38,802	3,306
By S. S. La Normandie.	Casks.	166	230,000	35,075
To Liverpool—	Old yellow metal.			
By S. S. Alaska.....	Bdls. / Bbls.	95 / 2	11,629	1,279
	Matte.			
By S. S. England.....	Sacks	5,011	503,937	28,000
By S. S. City of Rome..	Sacks	3,100	356,898	18,000
By S. S. Egypt..... .	Sacks	7,801	880,547	45,000
By S. S. Ohio	Bols.	224	224,636	18,000

Tin.—We have to report a very dull market all through the week, the result being that the quotations in this market have lagged somewhat below the London parity, and buyers here have shown but little disposition to accept the offers made to them, being apparently afraid that such offers at comparatively low prices were sent out in order to force sales. In this, however, we think they are mistaken, as in spite of very strenuous efforts to check a further advance in London the market there continues very firm and the comparatively lower offers made in the New York market may have some connection with the efforts to

break the London quotations. A further considerable decrease in the statistics of visible supplies is anticipated at the end of this month, the deliveries having been exceedingly good. Our closing quotations are: Spot, 19·75; July, 19·75; August, 19⅝; September, 19⅝, and the latest cable prices from London are: £87 5s., Spot; £87 15s., three months.

Lead.—In this market prices have given way again and we close with a very weak feeling. Lead has been freely offered both by holders of stocks in this city and by the Western smelters, the latter having now come out with offers at about 3·90 to 3·92½ New York delivery, without, however, finding buyers. The outlook is not very favorable, as the stocks here are greater than are required to meet the demand and hang as a weight over the market. Consumption has also been rather poor lately, and is not expected to improve before the fall, and in the meantime stocks out West are accumulating, the sales there having been less than during last month. Our closing quotations are: Spot, 3⅞; July, 3¾; August, 3¾; September, 3·90. The London market has declined during the week, and the last cable quotations are £12 12s. 6d. for Spanish, and £12 1s. 7d. for English.

Proposed "Corner" in Lead.—Our European exchanges report that "a meeting has been recently held at Paris of the principal lead producers of Europe. It was well attended by German, Spanish, and English producers, representing nearly half of the lead production of Europe. Various propositions for improving the position of the lead trade were considered. Those which found most favor were (1) for a voluntary reduction in the production of lead, and (2) for centralizing the sales of lead in each country in the hands of some strong financial house. A commission was appointed to prepare a report for submission to a future meeting on the practicability of carrying out these proposals, which are believed to have been acceded to already by many producers." This is all very interesting, but the fact that a number of the principal European producers can never be induced to join any combination will effectually prevent any permanent "corner" in European lead.

Messrs. Everett & Post, of Chicago, telegraph to-day as follows: The market continues weak and dull. Sales for the week amount to over 600 tons. Common principally from 3·82½@3·87½c.

Messrs. John Wahl & Co., of St. Louis, telegraph to-day as follows: There is nothing new to report. Business continues very dull, with but little prospect of any immediate improvement. Consumers continue to buy from hand to mouth. Nominal quotations are from 3·72½@3·75c.

Spelter is rather firmer again, owing to very light offerings and a somewhat better demand. The closing quotations are: Domestic, 4·55; Foreign, £16 15s.

Antimony.—In sympathy with the London market, where the price of Hallett's is now quoted £39, our prices have declined, and we now quote, Hallett's, 9⅝; Cookson's, 12¼.

Chemicals.—There are very few changes to be recorded in the condition of the general chemical market. Business continues dull, but owing to the very light stock in most lines, prices are well maintained.

Caustic soda ash, 48 per cent, is lacking animation, nothing being done, except in a small way, for consumers' immediate requirements. We continue to quote 1·25 for large lots, but this figure is more or less nominal and would probably be shaded to 1·20 for a very large order. On the spot, owing to the small amount available, 1·30 @ 1·35 is realized by the holders. High test is not inquired for to any extent, and the quotation of 1·15 is nominal.

Carbonated soda ash, 48 per cent, is also very dull, the demand being for small quantities only. The small spot stock maintains the price for goods for immediate delivery, and we hear of nothing offering below 1·30. To arrive 1·25 is quoted as acceptable. In high test nothing is doing and the quotations are entirely nominal.

Caustic soda, 60 per cent, is not wanted, such sales as we have heard of being merely for current requirements. We continue to quote 2·35 as a fair quotation, though a large buyer would probably get this figure shaded. In the higher tests, 70@74 per cent, nothing is doing. We note no change in quotations of 2·20 on basis of 60 per cent.

English sal soda is in about the same position as recorded last week. The market is firm and the very limited quantity on the spot brings 1·15c. in small quantities, and 1c. in larger lots. Futures are firmly held at 95c.

American sal soda is firm and we note no change in manufacturers' prices.

Bleaching powder continues dull and neglected, the only business doing being of a jobbing character to supply current needs. We note no change in quotations, which are held at 1·87½@1·92 according to brand, quantity, etc.

The acid market is in about the same condition as for some months past. Acetic acid is selling in a small way, but little has as yet been done in the way of contracts. We continue to quote 2¼@2½ as the present market value.

Sulphuric acid 66 degrees Beaumé is steadily maintained at the old figures of 90@95c. per 100 lbs. for large lots. For small quantities $1.00@$1.15.

Muriatic and nitric acids are moving fairly in accordance with current requirements, but nothing in a large way is doing. The prices are firm at our current list figures.

Oxalic acid still lacks animation and we hear of nothing doing outside of usual small sales. We continue to quote 6½ for large lots and 7c. in a jobbing way.

Fertilizing chemicals continue to be the active feature of the market. While business is not what might be called rushing, the volume is fair, and none of the dealers complain. Contracts for delivery during the coming fall and winter are now being made. The somewhat limited stocks maintain prices well. Ammoniates receive most attention; in phosphate, however, there is little doing at the moment. Potash salts are quiet, but figures are well maintained. We continue our quotations of last week for the principal fertilizing chemicals, as follows: Dried blood (city), low grade, 2·30@2·32½ per unit; Western, high grade, finely ground, 2·35@2·40 per unit; tankage, high grade, $24@$25 per ton. Low grade guaranteed 25 per cent bone phosphate and 7 per cent ammonia, $22@$23 per ton; fish scrap, $24@$25, f.o.b. factory; sulphate of ammonia, 3·15@3·20 per cwt.; steamed bones, $20@$22 per ton; dried Charleston rock is $6 per ton; undried, $5 per ton, both f.o.b. at mines.

IMPORTATIONS AT NEW YORK FROM JULY 10 TO JULY 18, AND FROM JAN. 1 TO SAME DATE.

	Week.	Year.
Spelter	Tons.	Tons
American Metal Co.,Lt.		247
Friedensville Zinc Co.		24
Hendricks & Bros.		28
Lewisohn Bros.		33
Naylor & Co.	28	103
Osgood, F.		83
Perkins, C. L.		725
Pope's Sons & Co.		28
Total	28	1,270
Corres. date 1887	15	1,890
Zinc Sheets.	Tons.	Tons.
H. Lemaache's Sons.		594
Milne & Co.		1
Naylor & Co.		25
Total		620
Nickel.	Lbs.	Lbs.
Mellor & Sanders.	5,150	143,316
Total	5,150	143,316
Antimony.	Casks.	Casks.
Total	34	1,820
Corres. date 1887.	67	2,195
Pig Lead.	Tons.	Tons.
Caswell, E. A.		46
N. Corwith & Co.	111	111
Hendricks Bros.		100
Total	111	257
Corres. date 1887	148	258
Tin.	Tons.	Tons.
Abbott & Co., Jere.		3,448
American Metal Co.		35
Birdwell & French		89
Crooke S. & R. Co.		131
Davol & Sons		8
Dickerson, Van Dusen		10
Funch, Edye & Co.	10	10
Hendricks Bros.		106
Knauth, W. & K.	10	21
Lewisohn Bros.		15
Muller, Schall & Co.	78	3,052
Naylor & Co.		824
Phelps, Dodge & Co.		381
Pope's Sons & Co		57
Schwarer Bros.		7
Thomsen & Co., A. A.	6	6
Thomson & Co., D.		169
Total	104	8,369
Corres. date 1887	225	6,108
Tin Plates.	Boxes.	Boxes.
American Metal Co.		301
Bruce & Cook	3,362	61,241
Byrne, James		15,950
Central Stamping Co.	794	19,781
Coddington & Co., T. B.	3,129	86,447
Corbierre, Fellows & S.	87	1,419
Cort & Co., N. L.	2,366	62,322
Cons. Fruit Jar Co.		849
Crooks & Co, Robert.	1,870	35,487
De Mill & Co., H. R.	2,970	10,909
Dickerson, Van Dusen.	8,746	148,318
Doily, T. G. F.		112
Iron Clad Mfg. Co		119
Lalance & Grosjean.		955
Lombard, Ayres & Co.	500	8,978
Merchant & Co	594	11,241
Mersick & Co., C. S.		4,042
Morewood & Co., G.	5,500	23,839
Naylor & Co.		8,899
Newall Bros.		158
Phelps, Dodge & Co.	25,974	383,153
Potts, W. A., Son & Co.		573
Pratt Mfg. Co.	7,916	92,075
Shepard & Co., Sidney.	1,318	71,163
Stroud & Co		686
Taylor, N. & G.		295
Thomsen & Co., A. A.	2,875	76,343
Warren & Co		1,065
Wheeler & Co.	494	1,682
Whittemore & Co., H.		38,821
Wolff & Reesing	1,420	18,594
Wright & Sons, Peter.		165
Total	69,915	1,187,982
Corres. date 1887	20,333	1,082,311
Pig-Iron.	Tons.	Tons.
Abbott & Co, Jere		600
Austin, B. & Co		100
Baldwin Bros. & Co.		100
Bartlett & Co., N. S.	300	3,200
Crocker Bros.	400	6,400
Crooks & Co., R.		700
Dana & Co.		400
Downing & Co.		51
Drum'nd, McCall & Co.		20
Erie Despatch		250
Henderson Bros		1,375
Holt, H. N		50
Lee & Co., James.		325
Milne & Co., A.		901
Naylor	770	2,815
Pierson & Co.		15
Page, Newell & Co.	13	13
Sanderson & Sons.		2
Stetson & Co., G. W.	150	10,457
Tonsils, M. R.		120
Walbaum, W. H.		200
Williamson & Co., Jas.	100	2,300
Total	1,733	30,384
Corres. date 1887	4,141	86,238

	Week.	Year.
Steel Sheets, Billets, Forgings, etc.	Tons.	Tons.
Abbott & Co, Jere.	132	1,635
Arkell, Jas		17
Belcher, H. U.		5
Bowker, C. F.	19	216
Bruce & Cook		7
Carey & Moen		24
Carter, G. T.		273
Cohn, M	15	125
Cooney, D. J.		20
Crooks, R. & Co.	42	659
Crousbey, H.		236
Dana & Co.		51
Downing & Co., R. F.	15	243
Henderson Bros.		31
Holt, H. N.		6
Hondolette & D.		106
Hugill, Chas.	9	111
Lalance & G. Mfg. Co.		229
Lazard Freres		50
Leng, J. S.		22
Lebenberg, N.		36
Littlejohn, Jas.		40
Lundberg, G.	100	100
Mersick & Co.		124
Milne & Co., A.	21	1,085
Montgomery & Co.		52
Moore's Son & Co.		25
Muller, Schall & Co.		5
Manas, J. & Son.		10
Naylor & Co.	74	5,375
Newton & Shipman	3	45
Ogden & Wallace		181
Phelps, Dodge & Co.		3
Phœnix Steel Co.		20
Pierson & Co	15	629
Pilditch, F. S.	18	188
Power, C. W.		42
Prosser, Thomas	140	1,827
Roebling's Sons, J. A.		350
Sanderson & Son		42
Shotts Iron Co.		15
Strouse & Co.		25
Temple & S.		6
Union Bridge Co		288
Wagner, W. F.	112	711
Walbaum, W. H.		2,479
Waischid, C. A.		
Wallace, W. H & Co.	26	41
Webb, J. B	1	1
Whiting, E. W.		11
Whitney & Co.		27
Wilson, J. G.		10
Whittemore & Co		6
Wetherill & Co		2
Wolff, R. H		150
Wright's Sons & Co.		10
Total	742	18,023
Corres. date 1887	515	46,012
Bar-Iron.	Tons	Tons.
Abbott & Co., Jere	190	1,858
Abeel Bros.		3
Bacon & Co.		13
Downing & Co.	89	139
Jacobus, E. Y.	1	12
Lilienberg, N.		5
Lundberg, Gustaf.		262
Milne & Co., A.		95
Naylor & Co.		25
Page, Newell & Co.		122
Philip, C. M		20
Wallace & Co., W. H.	4	16
Wilson, J. G.		7
Totals	284	2,577
Corres. date 1887	249	6,441
	Week.	Year.
Steel & Iron Rods.	Tons.	Tons.
Abbott & Co., Jere.	226	5,738
American Screw Co		748
Bacon & Co.		109
Baldwin Bros. & Co.	53	53
Carey & Moen	25	480
Cohn, M.		60
Dana & Co.	21	1,718
Downing & Co., R. F.		192
Galpin, S. A.		2,110
Heyn, A		1,689
Hugill, Chas.		33
Jacobus, E. Y.		12
Lazard Freres		647
Leng, J. S.		17
Lundberg, Gustaf.		120
Milne & Co., A		1,408
Montgomery & Co.	5	65
Muller, Schall & Co.		150
Naylor & Co.	572	13,011
Newton, & Shipman.		2
N. Y. Barb Wire Co.		20
Page, Newell & Co.		152
Perry & Ryer		100
Pierson & Co.		10
Pilditch, F. S.		11
Prosser, Thos		132
Roebling's Sons, J. A.	50	1,560
Sanderson & Son		67
Sheldon & Co., G. W.		11
Walschid C. A.		15
Washburn Mfg. Co.		35
Whittemore & Co.		1,700
Wolff & Co., R. H.	173	1,369
Total	1,125	33,544
Corres. date 1887	708	72,027

	Week.	Year.
Old Rails.	Tons.	Tons.
Baldwin Bros.		100
Bowening & Archibald.		100
Brown Bros. & Co.		668
Crossman & Bro., W. H.		1,005
D., L. & W. R. R.		409
Frankfort, M.		100
Geisenheimer & Co.		100
Henderson Bros		537
Neumark & Gross		1,912
Stetson & Co., Geo. W.		230
Waltam & Co		300
Winter & Smillie		80
Total		5,541
Corres. date 1887	2,189	104,872
Sheet Iron.	Tons.	Tons.
Coddington & Co.	30	1,211
Newton & S.		4
Wagner, W. F		40
Whitney & Co.		5
Total	30	1,260
Corres. date 1887.	24	1,121
Scrap-Iron.	Tons.	Tons.
Brown Bros. & Co.		20
Burgess & Co.		172
Crossman, W. H. & Co.		47
Geisenheimer & Co.		565
Gerhardt, P. T.		8
Muller, Schall & Co.		15
Neumark & Gross		321
Purdon & W		75
Trowbridge & Co., D.		75
Ward & Co., J. E.		150
Total		1,548
Corres. date 1887.	2	13,551
Charcoal Iron.	Tons.	Tons.
Abbott & Co., Jere.		3
Downing & Co.		25
Lunberg, G.		16
Mersick & Co.	60	70
Milne & Co.		15
Muller, Schall & Co.		2
Naylor & Co.		25
Page, Newell & Co.		307
Sanderson & Son.		1
Total	60	464
Spiegeleisen.	Tons.	Tons.
Abbott & Co., Jere.		205
Arkell, Jas.		78
Crocker Bros.	291	1,602
Dana & Co.	200	451
Geisenheimer & Co.		203
Jansen, J. A.		10,293
Naylor & Co.	467	7,547
Perkins, C. L.		2,443
Pierson & Co.		1,035
Total	958	23,857
Corres. date 1887.	1,006	56,855
Iron Ore.	Tons.	Tons.
Cormack & Co.		1,022
De Flores, R.		6,768
Earnshaw, A.		4,670
Ennis & Co.		1,721
Johnston & Co		300
Naylor & Co.		3,706
Wright, Chas. L. & Co.		1,630
Total	1,022	19,817
Corres. date 1887.	308	26,138

EXPORTS.

	Week.	Year.
Copper.	Pounds.	Pounds
Abbott & Co	502,117	7,028,519
Amer. Metal Co	100,000	4,606,100
Becker, & Co., H.		1,250
Bridgpt. Copper Co		112,000
Copper Queen		224,034
Herold, Emil		250,000
Ismay, J. Bruce		115,000
Jones, R. W.		189,984
Ledoux & Co		110,276
Lewisohn Bros.		4,860,254
Lomal, F. A.		2,691,293
Mendel, S.		560,000
Muller, Schall.		1,105,000
Neumark & Gross		120,143
Orford Co.		349,881
Parsons & Co	138,750	206,250
Phelps, Dodge		230,664
Pope's Sons		1,282,530
Todd & Co.		112,026
Total	740,867	24,165,204
Corres. date 1887.		7,425,998
Copper Matte.		
Abbott & Co		601,145
Amer. Metal Co.,	224,636	2,690,858
Ledoux & Co.		469,720
Lewisohn Bros.		1,126,822
Nichols & Co.		516,783
Wilm's, Terhune	1,237,448	33,158,261
Total	1,462,084	38,563,589
Corres. date 1887.		17,846,541
Old Copper.		
Burgass & Co	27,821	27,821
Total	27,821	27,821

CURRENT PRICES.

CHEMICALS.

Acid—Acetic.....2¾@2¾
Muriatic, 18°, per 100 lbs 1.20
Muriatic, 20°, per 100 lbs..... 1.35@1 50
Nitric, 36°, per 100 lbs ..... 4.50@5.00
Nitric, 42°, per 100 lbs..... 6.00
Oxalic.....6¼@7
Sulphuric, 60°, per 100 lbs..... 90
Sulphuric, 66°, per 100 lbs 1.10
Alkali—36 p. c..... 1.10@1.15
48 p. c .....1.22½@1.25
Refined, 58°..... 1.15
Alum—Lump, per lb..... 1¾
Ground, per lb..... 2¼
Lump per ton, Liverpool £5
Sulphate of Alumina, ℔ ton....£3 15
Aqua Ammonia—18°, ℔ lb..... 4
20°, ℔ lb..... 5
22°, ℔ lb..... 6¾
26°, ℔ lb..... 9¾
Ammonia—Sul., per 100 lbs. 3.00@3 50
Carb , per lb..... 7¾
Muriate, per lb..... 7
Arsenic—White, powdered, ℔ lb.3¼@3½
White, glass,..... 6½
Red. per lb 6½
White, at Plymouth, per ton.. £11 10
Asbestos—Am., p. ton.....$20@$100
Italian, p. ton, c. i. f. L'pool ...£18 0 0
Asphaltum—P. ton 13.00
Prime Cuban, ℔ lb .. ..5@6c.
Hard, ℔ ton..... $28.00
Trinidad, refined, ℔ ton..... $30.00
Barytes—Sulph., Am. prime white16.00
Sulph., foreign, floated, p. ton....19.00
Sulph., off color, p. ton 12.50
Carb., lump, f.o.b. L'pool, ton ...£6 0 0
No. 1, casks, Runcorn " "£4 10 10
No 2. bags, Runcorn " " 3 15 0
Bleach—Over 35 p.c., ℔ lb.1.82½@1.95
Borax—Per lb 7¾
Re-fined at Liverpool, per ton..... £31
Brimstone—*See Sulphur.*
Bromine—Per lb..... 36
Cement—Rosendale, per bbl..... 1.00
Portland, American, per bbl..... 2.00
Portland, foreign, per bbl..... 2 25
Chalk—Per ton..... 3.00
Precipitated, per lb..... 4
China Clay—English, per ton....18.50
Southern, per ton..... 13.50
Chrome Yellow—Per lb..... 8
Cobalt—Oxide, per lb..... 270
Copper—Sulph. English Wks.,ton£23
Precip., Eng. Wks, unit...fluctuating
Copperas—Common, per 100 lbs.$ 65
Best, per 100 lbs..... 1.00
Liverpool, per ton, in casks, £1 16 1.20
Cream of Tartar—Am. 99%....32@32¾
Powdered, 99 p c..... 33½
Emery—Grain, per lb 4
Flour, per lb 2½
Feldspar—Ground, per ton.....14.00
Fuller's Earth—Lump, per bbl. 95
Powdered, per lb..... 2
Gypsum—Calcined, per bbl..... 1.25
Iodine—Resublimed..... 3.60
Kainit—Per ton..... 11.50
Kaolin—*See China Clay.*
Lead—Red, per lb..... 6
White, American, in oil, per lb.... 6½
White, English, per lb 7½
Acetate, or sugar of.....13@13½
Lime Acetate—Amer. Brown.1.50@1.55
" Gray.2.37½@2.40
Litharge—Powdered, per lb ..... 6@6¼
English flake, per lb..... 9
Magnesite-Greek, per ton.....10.00
Manganese—lump, c.i.f. L'pool.£2 15
Per unit, up or down..... 1s. 6d.
Ground £5 10
Mercuric-Chloride — (*Corrosive Sublimate*) per lb..... 55
Mineral Wool—Per lb..... 2
Mica—In sheets according to size,
1st quality, ℔ lb.....25@$6 00
Phosphate Rock—S. Carolina,
per ton f. o. b. Charleston..... 5.00
Ground, ex vessel New York .9.50@ 9.60
Canadian Apatite, lump, f. o. b. at
shipping port, per unit..... 24
Phosphorus—Per lb..... 65
Plumbago—Ceylon, per lb.... 4@5
American, per lb..... 5@7
London, per cwt..... £0 15 0
Potassium—Cyanide, per lb... 39@41
Bromide, per lb..... 37
Chlorate, per lb..... 15¼@15½
Carb. per lb..... 5
Caustic, per lb..... 7½
Iodide..... 2.70@2.75
Muriate, per 100 lbs..... 1.77½@1.80
Nitrate, refined, per lb..... 6
Bichromate, per lb..... 10½
Sulphate, per 100 lbs..... 1.10
Yellow Prussiate, per lb..... 19
Red Prussiate, per lb..... 42
Pumice Stone—Select lumps, lb. 3@5
Original cks., per lb..... 1¾
Powdered, pure, per lb.. 2
Pyrites—Non-cupreous, p. unit, S. 14
Quartz—Ground, per ton 18.00
Rotten Stone—Powdered, per lb. 8½
Lump, per lb..... 5
Eng., powdered, per ton £4
Lump, per ton..... £5
Salt—Liverpool, ground per bbl. 70
Turk's Island, per bbl 25
Salt Cake—Per 100 lbs..... 50
Saltpeter—Crude, per lb..... 4½
Refined, per lb..... 6
Soda Ash—Carb.,48 % 100 lb...1.30 @1.35
Caustic, 48 %..... 1.30 @1.35
High test..... 1.12½@1.15
Soda Caustic, 60%.....2.40@2.50
" " 70%..... 2.25
" " 74-5%..... 2.20
Sal, English, per 100 lbs..... 1.15
Sal, American, per 100 lbs..... 1.15
Nitrate, per 100 lbs..... 2.05
Strontium—Nitrate per lb..... 10½
Sulphur—Roll, per lb..... 1¾
Flour, per lb 2
Crude Brimstone, 2s., ℔ ton.... 22.00
Crude Brimstone, thirds, per ton 21.25
Talc—Ground French, per lb.. ... 1¼
Domestic, per lb..... 6
Domestic, per ton..... 15.00
c. i. f. Liverpool, per ton..... £4 5 0
Tannin—Pure, per lb. .....
Vermillion—American, per lb... 50
English, per lb, ... 65
Vitriol—(Blue), Ordinary, per lb.. 5½
Extra, per lb 6
Zinc Oxide—Am., Dry, per lb.... 4½
Antwerp, Red Seal, per lb..... 6@6½
Paris, Red Seal, per lb..... 6½@7
* Spot.

BUILDING MATERIAL.

Bricks—Pale, per 1,000 ..... 5.00
Jerseys, per 1,000 ..... 7.50
Haverstraw, per 1,000..... 8.50
Front bricks, per 1,000. from.....10.00
Building Stone—Amherst free-
stone, per cu. ft., from..... 75
Brownstone, per cu. ft., from..... 1 00
Granite, rough, per cu. ft., from.. 45
Slate—Purple and green roofing,
per 100 ft..... 6 00
Red roofing, per 100 sq. ft.... .....15.00
Black, roofing, per 100 sq. ft. ... 5.00

THE RARER METALS.

Aluminum—(Metallic), per lb...$5.00
Arsenic—Metallic, per lb..... 32
Barium—(Metallic), per lb..... 975.00
Bismuth—(Metallic), per lb..... 2.40
Cadmium—(Metallic), per lb.... 150 00
Calcium—(Metallic), per oz..... 150.00
Cæsium—(Metallic).....
Cerium—(Metallic) per oz..... 160.00
Chromium—(Metallic), per lb...200 00
Cobalt—(Metallic), per lb..... 6.00
Didymium—(Metallic), per oz...160.00
Erbium—(Metallic), per oz..... 140.00
Gallium—(Metallic), per oz 3250.00
Glucinum—(Metallic) 4.50
Indium—(Metallic), per oz..... 158.00
Iridium—(Metallic), per lb..... 700.00
Lanthanum—(Metallic, per oz.175.00
Lithium—(Metallic), per oz.....160.00
Magnesium—Per lb..... 4.00
Manganese—Metallic, per lb... 1.10
Molybdenum—(Metallic), per oz 6.00
Nickel—(Metallic), per lb..... .65
Niobium—(Metallic), per oz.....128.00
Osmium—(Metallic), per lb 640.00
Palladium—(Metallic), per lb...512.00
Platinum—(Metallic), per lb ..128.00
Potassium—Metallic, per oz... 2.00
Rhodium—(Metallic), per lb ...512.00
Ruthenium—(Metallic), per oz.112.00
Rubidium—(Metallic), per oz....200.00
Selenium—(Metallic), per oz.. .. 3.00
Sodium—(Metallic) per lb .. 4.50
Strontium—(Metallic), per oz..128 00
Tantallum—(Metallic) per oz....144.00
Telurium—(Metallic) per oz.... 9 00
Thallium—(Metallic) per oz..... 3.00
Titanium—(Metallic) per oz....32.00
Thorium—(Metallic) per oz ...272.00
Tungsten—(Metallic) per oz..... 1.25
Vanadium—(Metallic), per oz..320.00
Yttrium—(Metallic), per oz 144.00
Zirconium—(Metallic), per oz..240.00

METALS.

Aluminum—
Bronze (10 %), ℔ lb..... 46c.
Copper—
Lake Ingot, Spot, ℔ lb.... 16·80@16.90c.
Electrolytic, ℔ lb ... . 16·50c.
Casting Brands, ℔ lb. ... 15·25@15¾c.
Chili Bars, London, ℔ ton..... £78 10s.
Sheet Copper (according to
size), ℔ lb..... .....25 @38c
Lead—
Domestic, Common, Spot.. 3·90@4c.
Foreign ..... 4 60@4 70c.
Sheet, ℔ lb, net .....6.75@6·80c. net
Pipe, ℔ lb ... . 6¼c. "
Tin lined Pipe, ℔ lb..... 12c. "
Shot, ℔ lb ..... 6¼@ 7¼c
Tin—
Tin Plates ..... 14s. 6d.
Tin Spot in London ... £87 10s.
Pig tin, spot in N. Y., ℔ lb.. 19·85c.
Zinc—
Domestic spelter, ℔ lb... ..4·55@4·65c.
Foreign spelter, ℔ lb... ... 5·30@5·40c.
Silesian, ton..... £16 15s.
Sheet, American, ℔ lb .. .... 6@6¼c.
Antimony—Hallet's, per lb... 9%@9¾c.
Cookson's, per lb..... 12
Star Antimony..... £38
Quicksilver—Per lb.....61@63c.
London, ℔ flask..... £7@£7¼

IRON AND STEEL.
New York Prices.

American Pig-Iron.—At tidewater.
No. 1 X ....$17.50@$18.50
No. 2 X..... ....$17.00@ 17 50
Forge..... ....$16.00@.....
Scotch Pig—Coltness... $19.75@$20.50
Clyde ..... 18.50@ 19.00
Dalmellington..... 18 50@ 19.00
Summerlee..... 19.50@ 20.00
Shotts..... 19 50@ 20.00
By Cable to-day to the Metal Exchange :
Scotch Warrants.....38s. 5d.
Coltness, at Glasgow ..... 48s. 0d.
Langloan, at Glasgow..... 44s. 9d.
Summerlee, at Glasgow..... 46s. 6d.
Gartsherrie, at Glasgow..... 44s. 6d.
Glengarnock, at Ardrossan.....43s. 6d.
Dalmellington, at Ardrossan.....40s. 0d
Eglinton, at Ardrossan ..... 38s. 6d.
Bessemer Pig—
Foreign, nominally..... $19.00
Domestic ....18@18.50 at furnace
Spiegeleisen—
German, 20 per cent..... $26
English, 20 " " .....$26.50@ 27.00
" 30 " " ..... 31.00@ 31.50
Ferro Manganese.....$49.00@$50.00
Steel Blooms, nominally .....
Steel Billets, " 28 50@ 29.00
Steel Nail Slabs, " 29.50@ .....
Steel Wire Rods, " 46.00@ 40.50
Steel Rails—
Heavy sections, at mill....$30.00@ .....
Light " " ..... 30.50@ 34.50
Structural Iron and Steel—
Bridge Plate, at mill.. .....1·9 @2c.
Angles, at mill ..... 2·00@2·05c.
Tees, at mill..... 2·40@2·50c.
Steel Angles, at mill..... 2·1 @2·2c.
Beams and Channels, on wharf, 3·3c. base
Steel Plates—
Tank and Ship, on wharf.....2 25@2·4
Boiler Shell, on wharf..... 2·4 @2·6
" Flange, " ..... 2·60 @2·75
" Fire-Box, on wharf.... 3 @3·50
Iron Plates—
Common tank, on wharf....1·9@2·0c.
Refined tank, on wharf.....2·1@2 3c.
Boiler shell, " ....2·1@2 3c.
Boiler flange, " ....3·50@3 75
Extra flange, " .... 3¼@3½
Bar Iron—
Refined..... 1·7@1·9c. "
Common ..... 1·5@1 6c. "
Merchant Steel—
American tool ..... 8½@10c.
Special grades..... 13 @20c.
Crucible machinery ..... 5 @6c
" spring..... 4½c
Bessemer machinery..... 2·2@2·5c
" spring. ..... 2·7@2·9c.
Cast-Iron Pipe—
According to size..... $25 00@$32.00
Wrought-Iron Pipe—nominally—
Butt-Welded, Plain and Tarred, 57½% disc;
Galv., 50% disc.
Lap-Welded, Plain and Tarred, 67½% disc.;
Galv., 55% disc.
Boiler Tubes—Per cent disc..... 62½%
Rail Fastenings—
Spikes..... .....2 @2·1c. delv'd
Angle Fish-bars..... 1·8 @1·9c.
Bolts and Sq. Nuts.....2·7 @2·8c
" " Hex " .....3 @
Wrought Scrap—
Foreign, *ex store*.....$19.00@
No. 1 Yard *to vessel*..... 19.00@
Cast Scrap ..... 15.50@ 16.50
Old Car Wheels..... @ 19 50
Old Rails—Tees ..... 20.00@ 20.50
—Doubles ..... 21.00@
Nails—In car-load lots. .. 1 90@1·95c.
—From store..... 2·00@2·05c.

Louisville Prices.

Hot Blast Irons—
So. Coke, No. 1..... ....$16.00@$16.50
" " No. 2..... 15.00@ 15 50
" " No. 2½ ..... 14.50@ 15.50
Mahoning Valley (Lake Ore
Mixture) ..... 18.00@ 18.50
So. Charcoal, No. 1..... 17.00@ 17.50
" " No. 2 ..... 16.00@ 16.50
Missouri Charcoal No. 1.... 19.00@ 19.50
" " No. 2.... 18.50@ 19.00
Forge Irons—
Neutral Coke..... $13 25@$14.00
Cold Short ..... 13.00@ 13.50
Mottled..... 12.25@ 12.50
Car Wheel and Malleable Irons—
Southern (standard brands).$22.00@$24 00
" (other brands)..... 18.00@ 18 50
Lake Superior..... 21.50@ 22.50

Pittsburg Prices.

Coke or Bituminous Pig—
Foundry No. 1..... ..$16.50@17.00
Foundry No. 2..... 16.00@ ...
Gray Forge No. 3..... 14.25@14.50
" " No. 4..... 14.25@ ....
White ..... 13.50@ ....
Mottled..... 13.50@ ....
Silvery ..... 16.50@18.00
Bessemer..... 17.00@17.25
Charcoal Pig—
Foundry No. 1. ..... 23.50@24.50
Foundry No. 2..... 22.00@24.00
Cold-Blast..... 25.00@26.00
Warm-Blast..... 24.00@25.00
20 p. c. Spiegel..... 27.50@ ..
Muck-Bar..... 26.25@26.50
Steel Blooms..... 28.00@28.50
Steel Slabs ..... 28.25@28.50
Steel Crop Ends..... 18.00@
Steel Bloom Ends..... @17 50
Steel Billets..... 28.00@28.25
Old Iron Rails..... 21.25@21.50
Old Steel Rails..... 14.00@ ....
No. 1 W. Scrap..... 19 00@ ...
No. 2 W. Scrap..... 17.00@17.50
Steel Rails..... *31.50@32.00
" light sections..... *32.00@33.00
Bar Iron., nominal..... 1.75@ 1.85
Nails ....$1.90 usual discount
Steel Nails..... .....$1.90
Two per cent off for cash.
* At works.

Philadelphia Prices.

Foundry No. 1..... ... $18.00@19.50
Foundry No. 2..... 17.00@18 50
Gray Forge..... 15.50@16.50
Bessemer Pig..... 19.50@20.00
Steel Rail Blooms ..... 29.50@ nom.
Foreign Bessemer..... 19.50@20.00
Spiegeleisen..... 26.50@27.00
Scrap, Selected..... 22.00@22.50
No. 1..... 21.00@20.00
Cargo Scrap..... 21.00@20.50
Muck-Bars..... 27.50@ ....
Merchant Iron..... 1.75@ 1.95
Plate Iron..... 2.00@ ..
Tank Iron ..... 2.00@ 2.20
Skelp Iron..... 1.80@ 1.90
Angles..... 2.00@ 2.10
Beams and Channels..... 3.30.@..
Nails ..... 1.90@ 2.00
Steel Rails..... 31.50@33.50
Old Rails..... 21.00@22.00
Best refined..... 2@2·1c. base

STOCK MARKET QUOTATIONS.

Baltimore, Md.

COMPANY.	Bid.	Asked.
Atlantic Coal....	....	1.75
Balt. & N. C.....	.15@.27	.40
Big Vein Coal..	....	....
Conrad Hill . ..	.07@.11	.13@.15
Diamond Tunnel	....	....
George's Crk. C.	100	103@110
Lake Chrome..	.05	....
N. State, Balto..	.15	.30
Ore Knob	....	....
Silver Valley . .	.90	1.10

Highest and lowest prices bid and asked during the week ending July 19th.

Birmingham, Ala.

COMPANY.	Bid.	Asked.
Ala. Conn. C..	....	25
Bir. Min. & Mfg.	...	190 @192½
Bir. Fur. & Mg.	....	22½
Broken Arrow C. & M.. ...	10	15
Decat. L. Imp. & Fur..	14½@14¾	15 @ 15½
DecaturMin. L.	....	17½@ 27½
Enterprise Mfg Co	35	50
Jagger-Townley C & C.Co.	....	11
Mag-Ellen C. & Mg	50	...
No Bus. Crk., C. & Mg.....	5	....
Pioneer M. & Mfg	....	....
Sloss I. & S. ..	12 @13¾	13½@ 13
* Sloss I. & S..	76	....
Sheffield C. & I.	65	70
Tenn. C. & I. Co.	25½@27	27½
*Williamson Iron Co....	....	....
Woodstock S&I	49 @49½	56½

* Bonds.

Highest and lowest prices bid and asked during the week ending July 12th.

Pittsburg, Pa.

COMPANY.	H.	L.	Closing.
Allegegheny Gas.	35.00	.....	35.00
Bridgewater Gas..	....	....	....
Charlotte Mg. Co..	....	....	....
Chartiers Val. Gas.	53.00	51.50	52.50
Columbia Oil Co..	.....	.....	.....
Consignee Mg. Co.	.....	.....	.....
Forest Oil Co.....	.....	.....	.....
Iron City Mining..	.....	.....	.....
Kittanning Gas...	.....	.....	.....
La Noria Mining ..	2.00	.....	2.00
Lustre Mining....	.....	.....	.....
M'f'turers' Gas...	24.75	24.63	24.75
Nat. G. Co. of W. Va	.....	.....	.....
N. Y. & C. Gas Coal	....	....	.....
N. Y. & Westmoreland G. C. & C..	.....	.....	.....
Ohio Valley Gas ..	.....	.....	.....
Pennsylvania Gas.	22.00	.....	22.00
People's Nat. Gas.	43 00	....	43.00
Philadelphia Gas..	44.00	42.50	42 75
Pine Run Gas.....	84.00	84.00	84.00
Pittsburg Gas.....	60.00	60.00	60.00
R. yal Gas.....	15.50	14.00	14 00
Silverton Mining..	2.25	2.00	2.13
South Side Gas....	....	....	.....
Tuna Oil Co.....	....	....	.....
Washington Oil...	46 00	45.00	45.00
W't'h'se Air-Brake	125.00	124.00	125.00
West'house Brake	.....	.....	.....
Westmoreland & Cambria Gas..	.....	.....	.....
Wheeling Nat. Gas.	.....	.....	.....
Yankee Girl Min...	.....	.....	.....

Highest and lowest prices bid and asked during the week ending July 18th.

Foreign Quotations.

COMPANY.	*London.* Highest.	July 6. Lowest.
Alturas Gold, Idaho...	15s.	14s.
Arizona Copper, Ariz..	15s. 6d.	15s.
Birdseye Creek, Cal. ..	6s.	5s.
Carlisle, N. Mex	17s. 6d.	16s. 6d.
Centennial. Cal.	7s. 6d.	5s.
Colorado United, Colo..	5s.	3s.
Columbian, S. A.....	37s. 6d.	32s. 6d.
Denver Gold, Colo.....	2s.	1s.
Dickens Custer, Idaho.	6s. 6d.	5s. 6d.
Eberhardt, Nev	2s.	1s.
El Callao, Venezuela....	£3	£2¾
Empire, Mont	£15-16	£13-16
Flagstaff, Utah.....	4s.	3s.
Garfield, Nev.....	16s.	14s.
Gold Hill, N. C.....	2s.	1s.
Idaho.....	14s. 6d.	13s. 6d.
Ilex, Cal.....	17s.	15s.
Josephine, Cal	£⅞	£¾
Kohinoor, Colo.....	3s. 3d.	2s. 9d.
Lady Franklin N. Mex .	6s.	4s.
Mason & Barry, Portugal	£8¾	£8½
Montana Lt., Mont	£1⅛	£1 2-5
New California, Colo...	4s.	3s 6d.
New Emma, S., Utah..	5s.	4s.
New Hoover Hill, N. C.	2s.	1s.
New La Plata, Colo...	1s. 9d.	1s. 3d.
Pittsburg Cons., Nev...	25s.	20s.
Plumas Eureka, Cal....	£1	£15-16
Quebrada, Venezuela...	£4⅞	£4⅝
Richmond Con., Nev..	£4⅛	£3⅞
Ruby&Dunderberg, Nev	2s.	1s.
Russell Gold, N. C.....	3s.	2s.
Sierra Buttes, Cal.....	£⅝	£⅛
Stanly, N. C.....	17s. 6d.	12s. 6d.
Tolima, Colombia, S.A.	£2½	£1⅛
Union Gold, Colo.....	2s.	1s.
U. S. Placer, Colo.....	£¾	£⅝
Viola Lt., Idaho	18s. 9d.	16s. 6d
	*Paris.**	July 5.
El Callao.....	69.00	69.00
Golden River	405	405
Lexington.	76	76
" parts.....	4.25	4.25
Rio Tinto.....	445	445
" obligations...	501.25	501.25
" "	2d.498.75	498.75
Tharsis	123.50	123.50

* Francs.

DIVIDEND-PAYING MINES.

	NAME AND LOCATION OF COMPANY.		CAPITAL STOCK.	SHARES. No.	SHARES. Par	ASSESSMENTS. Total levied.	ASSESSMENTS. Date and amount of last		DIVIDENDS. Total paid.	DIVIDENDS. Date and amount of last		
1	Adams, S. L.	Colo.	$1,500,000	150,000	$10				$555,000	Jan.	1887	.05
2	Alice, S. C.	Mont	10,000,000	400,000	25	*			750,000	Sept	1886	.06⅔
3	Alturas, G	Idah.	1,500,000	300,000	5				95,000	Sept	1886	.50
4	Amy & Silversmith, S.	Mon.		341,419					247,530	Aug.	1887	.12½
5	Atlantic, C.	Mich	1,000,000	40,000	25	$280,000	Apl.	1875	480,000	Aug.	1888	1.50
6	Argenta, S.	Nev.	16,000,000	100,000	100	325,000	July	1885	40,000	Feb.	1889	.20
7	Aurora, I.	Mich.	2,000,000	100,000	20				155,000	Oct.	1887	1.87½
8	Bassick, G. S.	Colo.	10,000,000	100,000	100	*			400,000	Mar.	1884	1.00
9	Belle Isle, S.	Nev.	10,000,000	100,000	100	145,000	Feb	1887	300,000	Dec.	1879	.25
10	Belcher, G. S.	Nev.	10,400,000	104,000	100	3,666,030	Mar.	1888	15,397,200	Apl	1876	1.00
11	Bellevue Idaho, S. L.	Idah.	1,250,000	125,000	10	67,500	Nov.	1887	187,500	Jan	1887	.10
12	Big B'nd Hydraulic, G	Dak.	1,000,000	200,000	5	*			258,000	Aug.	1887	.05
13	Black Bear, G.	Cal.	3,000,000	30,000	100	92,500	Dec.	1884	895,000	May	1883	.20
14	Bodie Con., G. S.	Cal.	10,000,000	100,000	100	450,000	Feb.	1888	1,295,000	Apl.	1885	.50
15	Bonanza Developm't	C & M	3,000,000	400,000	10				135,000	Oct.	1882	.15
16	Bonanza K'g, Cons. S.	Cal.	1,000,000	100,000	10	*			185,000	Feb.	1885	.20
17	Boston & Mont, G.	Mont	2,500,000	250,000	10	*			525,000	Jun.	1886	.15
18	Breece, S.	Colo.	5,000,000	200,000	25	*			2,000	Feb.	1880	.01
19	Brooklyn Lead, L. S.	Utah	500,000	50,000	10				127,000	July	1887	.05
20	Bulwer, G.	Cal	10,000,000	100,000	10	80,000	May	1888	175,006	Jan.	1884	.10
21	Caledonia, G.	Dak.	10,000,000	100,000	100	5.5,000	May	1885	40,000	Feb.	1886	.10
22	Calumet & Hecla, C.	Mich	2,500,000	100,000	25	1,200,000			30,350,000	July	1888	5.00
23	Carbonate Hill, S. L.	Colo.	2,000,000	200,000	10	*			80,000	Apl.	1884	.05
24	Caribou Con., S.	Colo.	1,500,000	150,000	10	*			50,000	Mch	1880	.10
25	Castle Creek, G.	Idah.	1,000,000	100,000	10				51,000	Oct.	1883	.03
26	Catalpa, S. L.	Colo.	3,000,000	300,000	10	*			270,000	May	1884	.10
27	Central, C.	Mich	500,000	20,000	25	100,000	Sept	1861	1,890,000	Aug.	1888	1.50
28	Christy, S.	Utah	10,000,000	100,000	100				10,000	Jun.	1885	.10
29	Chrysolite, S. L.	Colo.	10,000,000	200,000	50	*			1,650,000	Dec	1884	.25
30	Colorado Central, S. L.	Colo.	2,750,000	275,000	10	*			323,750	Aug	1888	.05
31	Confidence, S. L.	Nev.		24,199		287,440	Apl.	1887	149,760	July	1888	2.00
32	Cons. Cal. & Va., G. S.	Nev.	21,600,000	216,000	100	100,000	Jan.	1883	2,000,300	July	1888	.50
33	Con. Gold Mining, G.	Ga.	500,000	100,000	5	*			108,000	Nov.	1888	.02
34	Contention, S.	Ariz.	12,500,000	250,000	50				12,587,000	Dec.	1884	.25
35	Crescent, S. L. G.	Utah	15,000,000	600,000	25				210,000	Aug.	1886	.05
36	Crown Point, G. S.	Nev.	10,000,000	100,000	100	2,775,000	Apl.	1888	11,588,000	Jan.	1875	2.00
37	Daly, S. L.	Utah	3,000,000	150,000	20				675,000	July	1888	.25
38	Deadwood-Terra, G.	Dak.	5,000,000	200,000	25				11,000,000	Nov.	1887	.10
39	Derbec H. Grav., G. S.	Cal.	10,000,000	100,000	100	90, 0	Dec.	1881	180,000	May	1887	.10
40	Dunkin, S. L.	Colo.	5,000,000	200 000	25	*			335,000	July	1888	.05
41	Eclipse	Colo.	100,000	100,000	1				20,000	Nov.	1887	.10
42	Elkhorn, G. S.	Mont	1,000,000	100,000	10	50,0 0	July	1883	170,000	July	1887	.05
43	Empire Lt., G.	Mont	500,000	100,000	5				7 ,500	Oct.	1887	.37½
44	Eureka Con., G. S. L.	Nev.	5,000,000	50,000	100	500,000	July	1886	1.00	4,918,500	July	1888
45	Evening Star, S. L.	Colo.	500,000	50,000	10				1,400,000	Nov	1883	.50
46	Excelsior, G.	Cal.	10,000,000	100,000	100	560,000	Sept	1865	1.00	875,000	Oct.	1880
47	Father de Smet, G.	Dak.	10,000,000	100 000	100	200,000	Nov	1878	1.00	1,125,000	Dec.	1885
48	Franklin, C.	Mich	1,000,000	40,000	25	220,000	Jun.	1871		720,000	July	1888
49	Freeland, G. S. C.	Colo.	5,000,000	200,000	25	*				190,000	July	1886
50	Fresno Enterprise, G	Cal.	5,000,000	100,000	50			Mch	1883	.10	110,000	July
51	Garfield Lt., G. S.	Nev.	500,000	100,000	5						85,000	Apl.
52	Golconda, G. S.	Idah.	1,000,000	100,000	10						120,000	May
53	Gould & Curry, G. S.	Nev.	10,800,000	108,000	100	5,301,000	Jun.	1888	.50	3,826,800	Oct.	1870
54	Grand Central, S.	Ariz.	1,000,000	100,000	10					625,000	Dec.	1882
55	Grand Prize, S.	Nev.	10,000,000	100,000	100	570,000	Apl.	1886	.50	495,000	Mar.	1884
56	Granite, S.	Colo.	125,000	125,000	1					6,250	May	1883
57	Granite Mountain, S.	Mont	10,000,000	400,000	25					4,500,000	July	1888
58	Green Mountain, G.	Cal.	1,250,000	125,000	10					212,000	Nov.	1881
59	Hale & Norcross, G. S	Nev.	11,200,000	112,000	100	5,086,000	July	1887	.50	1,760,000	July	1888
60	Hall-Anderson, G.	N. S.	150,000	150,000	1					7,000	Jan.	1882
61	Hecla Con., S. G. L. C.	Mont	1,500,000	30,000	50					1,182,500	July	1888
62	Hel'a Mg & Red, G. S. L.	Mont	3,315,000	663,000	5					197,970	July	1886
63	Holmes, S.	Nev.	10,000,000	100,000	5	300,000	Sept	1885	10	75,000	Apl.	1886
64	Holyoke, G.	Idah.	200,000	200,000	1					27,000	Feb.	1883
65	Homestake, G.	Dak.	12,500,000	125,000	100	200,000	July	1878	1.00	4,168,750	July	1888
66	Honorine, S. L.	Utah	500,000	250,000	2	25,000	Jun.	1883		125,000	Sept	1887
67	Hope, S.	Mont	1,000,000	100,000	10	*				233,252	Apl.	1888
68	Horn-Silver, S. L.	Utah	10,000,000	400,000	25	*				4,000,000	Nov.	1884
69	Hubert	Colo.	500,000	50,000	10					230,000	Jun	1888
70	Idaho, G.	Cal.	310,000	3,100	100					4,916,500	July	1888
71	Ideal, S. L.	Colo.	1,500,000	50,000	10					15,000	Oct.	1886
72	Illinois, S.	Nev.	100,000	200,000	5	*				25,000	Apl.	1887
73	Independence, S.	Nev.	10,000,000	100,000	100	340,000	Oct.	1886	.20	225,000	Sept	1879
74	Indian Queen, S.	Nev.	250,000	125,000	2					368,750	July	1883
75	Iron Hill, S.	Dak.	2,500,000	250,000	10	111,250	Jun.	1888	.04	156,250	Nov.	1887
76	Iron-Silver, S. L.	Colo.	10,000,000	500,000	20					2,300,000	July	1888
77	Jackson, G. S.	Nev.	5,000,000	50,000	100	10,000	Nov	1880	.20	45,000	Oct.	1886
78	Jay Gould	Mont	2,000,000	4 ,000	5	*				267,000	Jun.	1888
79	Jocularia, S.	Nev.	2,500,000	250,000	10					1,200,000	Dec.	1885
80	Jumbo, G.	Colo.	2,000,000	200,000	10	*				35,000	Oct.	1887
81	Kentuck	Nev.	3,000,000	30,000	100	342,000	Nov	1881	.30	1,350,000	Dec.	1886
82	La Plata, S. L.	Colo.	2,000,000	200,000	10	*				610,000	Sept	1882
83	Leadville Cons., S. L.	Colo	4,000,000	400,000	10	*				423,000	Apl.	1887
84	Lexington, G. S.	Mont	4,000,000	40,000	100	*				565,000	Jan.	1885
85	Little Chief, S. L.	Colo.	10,000,000	200,000	50	*				860,000	July	1888
86	Little Pittsburg, S. L.	Colo.	20,000,000	800,000	25	*				1,050,000	Mch.	1880
87	Manhattan, S.	Nev.	5,000,000	50,000	100	250,000	Dec	1887	1.00	437,500	Feb	1886
88	Marion Bullion, G.	N. C	500,000							15,000	Jan.	1886
89	Martin White, S.	Nev.	10,000,000	100,000	100	1,150,000	Mar.	1886	.25	140,000	Dec.	1886
90	Mary Murphy, G. S.	Colo.	350,000	3,500	100	*				122,500	Feb.	1888
91	Minnesota, C.	Mich	1,000,000	40,000	25	420,000	Apl.	1886	1 00	1,826,000	Mar.	1876
92	Mono, G.	Cal.	5,000,000	50,000	100	616,000	Sept	1887	.50	12,500	Mar.	1886
93	Montana, L.	Mont	3,300,000	60,000	5	*				2,010,000	Apl.	1888
94	Morning Star, S. L.	Colo.	1,000,000	100,000	10	*				775,000	Mar.	1888
95	Moulton, S. G.	Mont	2,000,000	400,000	5	*				380,000	Dec.	1887
96	Mount Pleasant, G.	Cal.	150,000	150,000	1	*				150,000	Feb.	1887
97	Mt. Diablo, S.	Nev	5,000,000	50,000	100	137,500	Jun.	1880	2.00	110,000	July	1888
98	Napa, G.	Cal.	700,000	100,000	7					200,000	Jan.	1883
99	Navajo, G. S.	Nev.	10,000,000	100,000	100	485,000	Apl.	1888	.30	325,000	Feb.	1885
00	N. Hoover Hill, G. S.	N. C	1,200,000	120,000	10	*				30,000	Dec.	1885
101	Northern Belle, S.	Nev.	5,000,000	50,000	100	425,000	Jan.	1884	8.30	2,400,000	Apl.	1883
102	North Belle Isle, S.	Nev.	10,000,000	100,000	100	250,000	mar.	1887	.50	230,000	May	1888
103	Ontario, S. L.	Utah	15,000,000	150,000	100					9,350,000	July	1888
104	Ophir, G. S.	Nev.	10,000,000	100,000	100	4,059,440	Aug	1887	.50	1,595,800	July	1882
105	Original, S. C.	Mont	1,500,000	60,000	25	*				120,000	Apl.	1888
106	Osceola, C.	Mich	1,250,000	50,000	25	480,000	Apl.	1876	1.60	1,132,500	Jun	1888
107	Oxford, G.	N. S.	125,000	125,000	1	*				48,000	Dec.	1885
108	Paradise Valley, G. S	Nev.	10,000,000	100,000	100	62,000	Apl	1888	.15	150,000	Apl.	1887
109	Parrott, C.	Mont	1,800,000	180,000	10					155,000	Jan.	1888
110	Peacock, S. G. C.	N. M.	2,000,000	200,000	10	*				60,000	Nov.	1886
111	Pleasant Valley, G. S.	Cal.	10,000,000	100,000	100	10,000	Mar	1884	.10	30,000	Dec.	1882
112	Plutus, G. S. C. L.	Colo	2,000,000	200,000	10	*				20,000	Feb.	1886
113	Plymouth Con., G.	Cal.	5,000,000	100,000	50	*				2,280,000	Feb.	1888
114	Prussian, S. L.	Colo.	1,500,000	150,000	10					132,000	Jan.	1883
115	Quicksilver, pref., Q	Cal.	4,300,000	43,000	100					1,417,692	July	1888
116	" com., Q	Cal.	5,700,000	57,000	100					451,000	July	1884
117	Quincy, C.	Mich	1,000,000	40,000	25	200,000	Dec.	1882		4,970,000	Aug.	1888
118	Richmond, S. L.	Nev.	1,350,000	54,000	25	*				4,312,587	Jun.	1887
119	Ridge, C.	Mich.	500,000	20,000	25	219,939	Mar	1886	.50	93,785	Feb.	1880
120	Rising Sun, S.	Dak.	750,000	150,000	5	*				52,000	May	1881
121	Robinson Con., S. L.	Colo.	10,000,000	500,000	20	*				585,000	Mar.	1886
122	Robert E. Lee, S. L.	Colo	10,000,000	500,000	20					100,000	Dec.	1882
123	Rooks, G.	Vt.	500,000	50,000	10	*				61,000	Apr	1885
124	Savage, S.	Nev.	11,200,000	112,000	100	6,324,000	Sept	1887	.50	4,460,000	July	1889
125	Security L. Mg., Mfg.	Colo.	1,000,000	100,000	10	*				50,000	July	1884
126	Shoshone, G.	Idah.	150,000	150,000	1					7,500	Apl.	1883
127	Sierra Buttes, S.	Cal.	9,225,000	922,500	10					1,492,557	Apl.	1888
128	Sierra Nevada, G. S.	Nev.	10,000,000	100,000	100	6,125,000	July	1888	.25	1,062,500	Jan.	1871
129	Silver Cord, G. S. L.	Colo.	5,000,000	500,000	10	*				225,000	Nov.	1885
130	Silver King, S.	Ariz.	10,000,000	100,000	100	50,000	Jun.	1888	.50	1,950,000	July	1887
131	Silverton, G. S. L.	Colo.	2,000,000	200,000	10	*				80,000	Nov.	1886
132	Small Hopes Cons., S.	Colo.	5,000,000	250,000	20	*				3,112,500	Dec.	1887
133	Smuggler, S. L.	Colo.	600,000	60,000	10					66,700	Aug.	1883
134	Socorro, C.	N. M.	250,000	2,5 0	100					4,000	Mch	1882
135	Spring Valley, G.	Cal.	200,000	200,000	1	50,000	Oct.	1886	.25	50,000	Jan	1881
136	Standard, G. S.	Cal.	10 000,00	100,000	100	25,000	Oct.	1884	.25	8,395,000	Jun.	1888
137	Stormont, S.	Utah	500,000	500,000	1	*				155,000	Nov.	1881
138	St. Joseph, L.	Mo.	1,500,000	150,000	10	*				844,000	Dec.	1887
139	Surinam, G.	D. G.	3,000,000	600,000	5					105,000	Nov.	1887
140	Swansea, G.	Colo.	600,000	60,000	10					9,000	Apl.	1888
141	Syndicate, G.	Cal.	10,000,000	100,000	100	38,729	July	1882	.15	48,308	Sept	1883
142	Tamarack, C.	Mich.	1,000,000	40,000	25	520,000	Apl.	1885	3.00	240,000	July	1888
143	Tip Top, S.	Ariz.	10,000,000	100,000	100	250,000	Sept	1883	.25	100,000	Nov.	1881
144	Tombstone, G. S. L.	Ariz.	12,500,000	500,000	25	*				1,250,000	Apl.	1882
145	United Verde, C.	Ariz.	3,000,000	300,000	10	*				97,500	Feb.	1884
146	Valencia, M.	N. H.	150,000	1,500	100	*				37,500	Apl	1886
147	Vioia Lt., S. L.	Idah.	750,000	150,000	5	*				222,500	Dec.	1887
148	Yankee Girl	Colo.	2,500,000	250,000	10					1,275,000	July	1887
149	Yellow Jacket, G. S.	Nev.	12,000,000	120,000	100	5,448 000	Dec	1885	.75	2,184,000	Aug	1871

NON-DIVIDEND-PAYING MINES.

	NAME AND LOCATION OF COMPANY.		CAPITAL STOCK.	SHARES. No.	SHARES. Par Value.	ASSESSMENTS. Total levied.	ASSESSMENTS. Date & am't of last.		
1	Agassiz Cons., S. L.	Colo.	$2,500,000	50,000	$50	*			
2	Alloues, C.	Mich	2,000,000	80,000	25	$657,000	Jun	1888	1.00
3	Alpha Con., G. S.	Nev.	3,000,000	30,000	100	536,250	Jan.	1888	87½
4	Alta, S.	Nev.	10,080,000	100,800	100	2,191,200	May	1888	.50
5	Amador, G.	Cal.	400,000	200,000	2	*			
6	American Flag, S.	Colo.	1,250,000	125,000	10	300,000	Jun	1877	.50
7	Anglo-Montana, Lt.	Mon.	600,000	120,000	5	*			
8	Appalachian, Lt., G.	N. C	1,500,000	300,000	5				
9	Aspen Mg. & S., S. L.	Colo.	2,000,000	200,000	10				
10	Barcelona, G.	Nev.	5,000,000	200,000	25	*			
11	Bechtel Con., G.	Cal.	10,000,000	100,000	100	173,500	Jan.	1888	.10
12	Belmont, S.	Nev.	5,000,000	50,000	100	735,000	Apl.	1888	.10
13	Best & Belcher, G. S.	Nev.	10,080,000	100,800	100	2,029,390	Jun.	1888	.25
14	Big Pittsburg, S. L.	Colo.	20,000,000	200,000	100	*			
15	Bi-Metallic, S.	Mon.	5,000,000	200,000	25	*			
16	Black Oak, G.	Cal.	3,000,000	300,000	10	*			
17	Boston Con., G.	Cal.	10,000,000	100,000	100	170,000	Nov	1888	.25
18	Boston & Mont., C. S.	Mon.	2,500,000	100,000	25	*			
19	Bremen, S.	N. M	5,000,000	50,000	10	*			
20	Brunswick, G.	Cal.	2,000 000	400,000	5	*			
21	Bullion, G. S.	Nev.	10,000,000	100,000	100	3,957,000	Aug.	1887	.50
22	Bve and Bye	Ariz.	1,000,000	100,000	10	*			
23	Calaveras, G.	Cal.	500,000	500,000	1	*			
24	Carisa, G.	Wy.	500,000	100,000	5	*			
25	Carmelita, G. S. L. C.	Ven.	200,000	100,000	2	*			
26	Cashier, G.	Colo.	500,000	250,000	2	*			
27	Cen Contin't, G. S. L.	Colo.	2,000,000	200,000	10	*			
28	Charles Dickens, G. S.	Idah.	1,250,000	250,000	5	*			
29	Cherokee, G.	Cal.	1,500,000	150,000	10				
30	Chollar, S.	Nev.	11,200,000	112,000	100	1,208,000	Dec.	1887	.50
31	Cinnamon Mt., G. S.	Colo.	750,000	150,000	5	*			
32	Clipper, G.	Dak.	1,000,000	500,000	2	*			
33	Comstock, G. S.	Nev.	10,000,000	100,000	100	30 000	Mar.	1887	15
34	Con. Imperial, G. S.	Nev.	5,000,000	50,000	100	1,175,000	Sept	1887	25
35	Con. Pacific, G.	Cal.	6,000 000	60,000	100	177,000	Sept	1887	10
36	Cons. Silver, S.	Mo.	2,500,000	250,000	10	*			
37	Cop. Queen Cons, C.	Ariz.	1,400 000	140,000	10				
38	Corsican, S.	Colo.	500,000	50,000	10				
39	Crescent, S. L.	Colo.	3,000,000	300,000	10	*			
40	Crocker, S.	Ariz.	10,000,000	100,000	100	105,000	Feb.	1888	.20
41	Crowell, G.	N. C	500,000	500,000	1	*			
42	Dahlonega, G.	Ga.	250,000	250,000	1	*			
43	Dandy, S.	Colo.	5,000,000	500,000	10				
44	Dardanelles, G.	Cal.	1,000,000	100,000	10				
45	Decatur, S.	Colo.	1,500,000	300,000	5	*			
46	Denver City, S. L.	Colo.	5,000,000	500,000	10	*			
47	Denver Gold, G.	Colo.	300,000	60,000	5				
48	Durango, G.	Colo.	500,000	500,000	1	*			
49	Eastern Dev. Co., Lt.	N. S.	1,500,000	150 000	10	990,000	Mar.	1886	1.00
50	El Cristo, G. S.	U.S.C	1,000,000	500,000	2	*			
51	El Dorado, G.	Cal.	1,000,000	250,000	4	*			
52	El Talento, G.	U.S.C	1,000,000	500,000	2	*			
53	Empire, S.	Utah	10,000,000	100,000	100	*			
54	Eureka Tunnel, S. L.	Nev.	10,000,000	100,000	100	*			
55	Exchequer	Nev.	10,000,000	100,000	100	770,000	Feb.	1888	.20
56	Found Treasure, G. S.	Nev.	10,000,000	100,000	100	18,000	July	1882	.06
57	Gogebic L. Syn., I.	Wis.	5,000,000	200,000	25	*			
58	Gold Cud, G.	Colo.	500,000	500,000	1	*			
59	Golden Era, S.	Mon.	2 000,000	200,000	10	*			
60	Gold Placer, G.	Colo.	5,000,000	200,000	25	229,314	Dec.	1885	.25
61	Gold Rock, G.	Cal.	1,000,000	500,000	2	*			
62	Goodsnaw, G.	Cal.	10,000,000	100,000	100	*			
63	Grand Belt, C.	Tex.	12,000,000	120,000	100	*			
64	Grand Duke	Colo.	800,000	80,000	10	*			
65	Great Esmanance, G.	U.S.C	1,000,000	500,000	2	*			
66	Gregory-Bootail, G.	Colo.	550,000	550,000	1	*			
67	Gregory Con., G.	Mon.	3,000,000	300,000	10				
68	Harlem M. & M. Co, G.	Cal.	1,000,000	200,000	5				
69	Head Cent. & Tr. S. G	Ariz.	10,000,000	100,000	100				
70	Hector, G.	Cal.	1,500,000	300,000	5				
71	Highland, S.	Mich	500,000	25,000	25				
72	Hollywood	Cal.	200,000	100,000	2				
73	Hortense, S.		2,000,000	200,000	10				
74	Huron, C.	Mich	1,000,000	40,000	25	280,000	May	1887	3.00
75	Iron Gold & Silver, S.	N. M.	2,000,000	200,000	10	*			
76	Ironton, I.	Wis.	1,000,000	4 ,000	25				
77	Iroquois, C.	Mich	1,250,000	50,000	25				
78	J. D. Reynert	Ariz.	10,000,000	100,000	100	*			
79	Julia Cons., G. S.	Nev.	11,000,000	110,000	100	1,650,000	Apl.	1887	.10
80	Kearsarge, C.	Mich	1 250,000	50,000	25	190,000	Oct.	1887	1.00
81	Laclede	N. M.	2,000,000	200,000	10	*			
82	Lacrosse, G.	Colo.	1 000,000	100,000	10	*			
83	Lee Basin, S. L.	Colo.	5,000,000	500,000	10	*			
84	Lochiel, S.	N. M.	2,000,000	200,000	10	*			
85	Lucerne, S.	Colo	5,000,000	500,000	10	*			
86	Mammoth Bar, G.	Cal.	10,000,000	100,000	100	50,000	Dec.	1881	
87	May Belle, G.	Cal.	10,000,000	100,000	100	84,000	Mar.	1884	.15
88	Mayflower Gravel.	Cal.	1,000,000	100,000	10	325,000	Apl.	1888	.2
89	Medora, G.	Dak.	250,000	250,000	1	*			
90	Mexican, S.	Nev.	10,000,000	100,000	100	2,700,760	Jan.	1888	.25
91	Middle Bar, G.	Cal.	400,000	200,000	2	*			
92	Mike & Starr, S. L.	Colo	1,000,000	200,000	5	*			
93	Monitor, G.	Colo.	100,000	100,000	1	*			
94	Moose Silver, S.	Colo.	3,000,000	300,000	10				
95	Native, C.	Mich	1,000,000	40,000	25				
96	Neath, G.	Colo.	1,000,000	100,000	10				
97	Nevada Queen, S.	Nev	10,000,000	100,000	100	130,000	Dec.	1887	.50
98	New Germany, G.	N. S.	100,000	100,000	1	*			
99	New Pittsburg, S. L.	Colo.	2,000,000	200,000	10	*			
100	North Standard, G.	Cal.	19,000,000	100,000	100	20,000	Nov		.10
101	Noonday	Cal.	600,000	60,000	10	208,000	Dec.	1881	.10
102	Oneida Chief, G.	Cal.	500,000	125,000	4	*			
103	Oriental & Miller, S.	Nev.	10,000,000	400,000	10				
104	Osceola, G.	Nev.	5,000,000	50,000	25	*			
105	Overman, G.	Nev.	11,520,000	115,200	100	3,737,186	Aug.	1887	.25
106	Park, S.	Utah	2,000,000	200,000	100	*			
107	Peer, S.	Ariz.	10,000,000	100,000	100	195,000	Nov.	1886	.10
108	Peerless, S.	Ariz.	10,000,000	100,000	100	345,000	Apl.	1888	.25
109	Phœnix	Ariz.	500,000	500,000	100	*			
110	Phœnix, G. S.	Ark.	5,000,000	200,000	1	*			
111	Phœnix Lead, S. L.	Colo.	100,000	100,000	25	*			
112	Pilgrim, G.	Cal.	600,000	300,000	1	*			
113	Sacramento, G.	Nev.	11,520,000	115,200	100	1,293,600	Nov.	1887	.50
114	Proustite, S.	Idah	250,000	250,000	100	*			
115	Puritan, S. G.	Colo	1,500,000	150,000	1	*			
116	Quincy	Colo.	3,000,000	300,000	10	*			
117	Rappahannock, G. S.	Va.	250,000	250,000	10	*			
118	Red Elephant, S.	Colo.	500,000	500,000	1				
119	Ropes, G. S.	Mich	2,000,000	80,000	25	103,200	July	1887	.50
120	Russell, G.	N. C	1,500,000	300,000	25	*			
121	Sampson, G.	Utah	10,000,000	100,000	5	188,157	Mar.	1887	.25
122	San Sebastian, G.	San S	1,600,000	320,000	5	*			
123	Santiago, G.	U.S.C	400,000	1,200,000	2	*			
124	Security, S.	Colo.	10,000,000	1,000,000	10	*			
125	Sheridan	N. M.	2,000,000	200,000	10	*			
126	Silver Queen, C.	Ariz.	5,000,000	200,000	25	*			
127	Taylor-Piumas, G.	Cal

NEW YORK MINING STOCKS QUOTATIONS.

DIVIDEND-PAYING MINES.

NAME AND LOCATION OF COMPANY.	July 14.		July 16.		July 17.		July 18.		July 19.		July 20.		SALES.
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Adams, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Alice, Mont	....	....	....	....	....	....	....	....	....	....	....	....	.....
Argenta, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Bassick, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Belcher, Nev	....	....	4.25	....	....	....	....	....	4.25	....	4.10	....	750
Belle Isle, Nev.	....	....	....	....	....	....	....	....	.62	....	.62	....	1,300
Bodie Cons., Cal.	....	....	....	....	....	....	....	....	2.10	....	2 10	....	1,200
Breece, Colo	....	....	....	....	....	....	....	....	....	....	....	....	.....
Bulwer, Cal	....	....	....	....	....	....	....	....	.83	....	.78	....	1,600
Caledonia, Dak	....	....	....	....	....	....	....	....	....	....	....	....	.....
Central, Mich.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Chollar, Nev.	3.00	....	....	....	....	....	....	....	....	....	....	....	100
Chrysolite, Colo.	....	....	....	....	....	....	.41	....	....	....	....	....	500
Colorado Cent'l, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Cons. Cal. & Va., Nev.	9.88	9.50	9.88	9.75	10.00	9 50	....	....	10.00	9.75	10.50	10.38	2,200
Crown Point, Nev	....	....	....	....	....	....	....	....	....	....	....	....	.....
Deadwood, Dak	....	....	....	....	....	....	1 85	1.75	....	....	....	....	600
Dunkin, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Eureka Cons., Nev	....	....	....	....	....	....	....	....	....	....	....	....	.....
Father de Smet, Dak	....	....	....	....	.47	....	.47	.46	.46	....	.44	....	1,300
Freeland, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Gould & Curry, Nev.	....	....	2.85	....	....	....	....	....	2.90	....	3.00	....	750
Grand Prize, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Green Mountain, Cal.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Hale & Norcross, Nev	....	....	6.50	....	6.50	....	....	....	6.38	....	6.38	6.13	1,175
Holyoke, Idaho	....	....	....	....	....	....	....	....	....	....	....	....	.....
Homestake, Dak.	11.00	....	10.50	....	11.00	....	....	....	....	....	11.00	....	400
Horn-Silver, Ut.	....	....	....	....	....	....	.80	....	....	....	....	....	300
Iron Hill, Dak.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Iron Silver, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Ladville C., Colo.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Little Chief, Colo.	....	....	....	....	....	....	....	.24	....	.24	.23	....	1,400
Little Pittsburg, Colo	....	....	....	....	....	....	....	....	....	....	....	....	.....
Martin White, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Mono, Cal.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Moulton, Mont.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Mount Diablo, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Navajo, Nev.	....	....	....	....	....	....	....	....	1.80	....	1.75	....	900
North Belle Isle, Nev.	....	....	3 75	....	....	....	....	....	3.15	....	3.50	....	700
Ontario, Ut.	....	....	....	....	38.00	....	31.00	....	31.00	....	31.50	....	680
Ophir, Nev.	6.75	....	6.75	....	....	....	....	....	6.63	....	6.88	....	1,600
Plutus, Colo.	....	....	....	....	1.00	....	....	....	1 15	....	1.25	....	300
Plymouth, Cal.	8.25	8.13	8.25	....	8.13	....	....	....	8.13	....	....	....	340
Quicksilver Pref., Cal	....	....	38.00	....	41.00	40.00	....	....	....	....	....	....	700
" Com., Cal	....	....	....	....	....	....	11.00	10.25	10.75	10.00	11.38	10.88	5,200
Robinson Cons., Colo.	.75	.74	.80	....	....	....	....	....	....	....	....	....	700
Savage, Nev.	4.25	....	....	....	....	....	....	....	3.85	....	....	....	400
Sierra Nevada, Nev.	3 35	....	3.40	....	....	....	....	....	3.25	....	3.35	....	900
Silver King, Ariz.	1.10	....	1.25	1.05	1.00	....	1.25	*1.00	*1.05	1.00	1.60	†1.50	1,800
Silver Mg. of L. V.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Small Hopes, Colo.	....	....	....	....	....	....	....	....	1.10	....	....	....	100
Standard, Cal.	1 50	....	....	....	....	....	....	....	....	....	....	....	100
Yellow Jacket, Nev.	....	....	....	....	....	....	....	....	....	....	4.55	....	200

NON-DIVIDEND-PAYING MINES.

NAME AND LOCATION OF COMPANY.	July 14.		July 16		July 17.		July 18.		July 19.		July 26.		SALES
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Alta, Nev.	1.70	....	....	....	....	....	....	....	....	....	....	....	600
Amador, Cal.	2.40	....	2.25	2.15	2.15	....	2.20	....	2.20	....	2.20	....	2,000
Am'can Flag, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Astoria, Cal.	.24	....	.24	....	.24	....	.24	....	.24	....	.24	....	6,400
Barcelona, Nev.	1.10	....	1.00	....	1.00	....	....	....	....	....	....	....	700
Bechtel Con., Cal.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Best & B'licher, Nev.	....	....	4.40	....	....	....	....	....	3.90	....	4.10	....	1,100
Brunswick, Cal.	....	....	.14	....	....	....	....	....	....	....	.14	....	2,500
Bullion, Nev.	1.40	....	....	....	....	....	1.60	1.40	1.50	....	....	....	600
Carupano, Venes.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Cashier, Colo	....	....	....	....	....	....	....	....	....	....	....	....	.....
Castle Creek, Id.	....	....	....	....	....	....	....	....	.06	....	.06	....	100
Cleveland, Dak.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Columbia & Beaver	....	....	....	....	....	....	....	....	....	....	....	....	.....
Confidence, Nev.	30.13	....	....	....	....	....	....	....	....	....	....	....	300
Con. Imperial, Nev	.47	....	....	....	....	....	....	....	....	....	.40	....	2,200
Con. Pacific	....	....	....	....	....	....	....	....	....	....	....	....	.....
Denver City, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Eastern Oregon	....	....	....	....	....	....	....	....	....	....	....	....	.....
El Cristo, U. S. Col.	1 20	....	1.15	1.10	1.15	....	1.15	....	1.15	1.10	1.15	....	1,400
Exchequer, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Found Treas'e, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Hector, Cal.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Hollywood, Cal.	.39	....	.39	....	.40	.39	.40	.39	.39	.38	.39	....	5,600
Huron, Mich.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Julia, Nev.	.50	....	.50	....	.50	....	.45	....	.45	....	.45	....	2,700
Kingst'n & Pemb'ke	3.00	2.75	3 00	....	....	....	....	....	....	....	....	....	1,200
Kossuth, Nev.	.19	....	.20	....	.20	....	.19	....	.20	....	....	....	3,500
Lacrosse, Colo	....	....	....	....	....	....	....	....	....	....	....	....	.....
Lee Basin, Colo	....	....	....	....	....	....	....	....	....	....	....	....	.....
Mexican, Nev.	....	....	3.75	....	....	....	....	....	3.75	....	3 90	3.70	1,400
Middle Bar, Cal.	.45	....	.45	....	.44	....	44	....	.45	....	44	....	3,300
Monitor, Colo.	....	....	....	....	....	....	....	....	....	....	.13	.13	1,200
Ori'nt'l & Mil'r, Nev.	....	....	....	....	....	....	....	....	....	....	.08	....	1,000
Phœnix Lead, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Phœnix of Ark.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Potosi, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Proustite, Idaho	1.10	1.05	1.10	1.05	1.00	....	1 00	....	1.00	....	1.00	....	3,200
Rappahann'k, Va.	.11	....	.12	....	.11	.10	.11	....	....	....	.11	....	3,600
San Sebastian, S'nS	....	....	....	....	....	....	....	....	....	....	....	....	.....
Santiago, U. S. Col.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Scorpion, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
‡Security, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Shoshone, Idaho	.14	....	....	....	.14	....	.14	.13	.14	.12	.13	....	4,600
Silver Cliff, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Silver Cord, Colo.	.30	....	....	....	....	....	....	....	....	....	....	....	500
Silver Queen, Ariz.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Sutro Tunnel, Nev.	.10	.09	.11	.09	.10	.08	....	....	.08	....	.09	.08	10,600
Sutter Creek, Cal.	1.10	....	1.10	....	1.10	....	1.10	....	1.10	....	1.10	....	2,700
Taylor Plumas, Cal.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Tornado, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Union Cons., Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Utah, Nev.	1 50	....	....	....	....	....	....	....	3.40	....	3.75	....	650
													400

* Assessment unpaid. † Assessment paid. ‡ Dealt in at the New York Stock Ex. Unlisted Securities Dividend shares sold, 28,195. Non-dividend shares sold, 63,850. Total New York, 92,045.

BOSTON MINING STOCK QUOTATIONS.

NAME OF COMPANY	July 13.		July 14.		July 16.		July 17.		July 18.		July 19.		SALES.
Atlantic, Mich.	....	....	....	....	....	....	17.75	17.50	17.00	....	....	....	100
Bodie, Cal.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Bonanza Developm't	1.50	....	1.50	....	....	....	1 50	....	1.44	....	....	....	800
Boston & Mont., Mont	....	....	....	....	....	....	....	....	....	....	....	....	.....
Breece, Colo	....	....	.27½	....	.27½	....	.28	....	.27	....	....	....	1,300
Calumet & Hecla	*230¾	230½	....	....	*240	....	*240	....	*240	....	....	....	114
Catalpa, Colo.	....	....	....	....	....	....	.20	....	....	....	....	....	600
Central, Mich.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Chrysolite, Colo	....	....	....	....	....	....	....	....	....	....	....	....	.....
Con. Cal. & Va., Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Dunkin, Colo.	....	....	*.75	.72½	*.80	.75	.75	....	.75	....	.78	....	2,000
Enterprise	....	....	....	....	....	....	....	....	....	....	....	....	.....
Eureka, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Franklin, Mich.	*12½	11.75	....	....	12¾	....	12.50	12.38	12.25	....	13.00	12.50	1,420
Hale & Norcross, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Honorine, Utah	....	....	....	....	....	....	....	....	....	....	....	....	.....
Little Chief, Colo.	....	....	....	....	....	....	....	....	.25	....	....	....	300
Little Pittsburg, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Martin White, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Mono, Cal.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Napa, Cal.	....	....	2.00	....	1.88	1.75	1.88	....	†1.88	....	1.88	....	1,150
Osceola, Mich.	19.00	18.38	19.00	18.75	18.75	....	*18¾	....	18.75	....	18.50	....	400
Pewabic, Mich.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Quincy, Mich.	73.00	72.50	73.00	....	73.00	72.50	73.00	....	73.00	....	73.25	....	91
Ridge, Mich.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Sierra Nev., Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Silver King., Ariz.	....	....	....	....	....	....	....	....	....	....	5.00	....	100
Standard, Cal.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Tamarack, Mich.	....	....	154¾	....	152.	....	152.	....	....	....	....	....	56

NAME OF COMPANY.	July 13.		July 14.		July 16.		July 17.		July 18.		July 19.		SALES
Alloues, Mich.	....	....	.80	....	.87½	....	.87¼	....	.90	....	1.00	....	1,000
Arnold, Mich.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Aztec, Mich.	....	....	....	....	....	....	....	....	....	....	.07	....	200
Bos. & Mont., Mont.	46.00	44.00	46.75	46.50	47.00	46.50	47.50	47.00	48.00	47.50	47.00	....	1,100
Bowman	....	....	....	....	....	....	....	....	....	....	....	....	.....
Brunswick, Cal.	....	....	.18	....	....	....	.18	....	.18	....	....	....	1,100
Crescent, Colo.	.10	....	....	....	....	....	.10	....	.10	.09	.10	....	2,000
Cusi, N. Mex.	....	....	....	....	....	....	....	....	....	....	....	....	.....
El Cristo, U.S. Col	....	....	....	....	....	....	....	....	....	....	....	....	.....
Everett	.25	....	....	....	....	....	....	....	....	....	....	....	100
Hanover, Mich.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Humboldt, Mich.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Hungarian, Mich.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Huron, Mich.	4.00	....	4.00	....	....	....	....	....	4.00	....	4.00	....	450
Kearsarge, Mich.	....	....	6.00	....	5.88	....	....	....	....	....	....	....	1,200
Mesnard, Mich.	....	....	....	....	....	....	....	....	....	....	....	....	.....
National, Mich.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Oriental & M., Nev.	....	....	.10	....	.10	....	....	....	....	....	....	....	1,200
Rappahannock, Va.	.12	....	.12	....	.12	....	....	....	.12	....	.11	....	2,400
Royal, Mich.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Security, Colo.	.05	....	....	....	.05	....	....	....	....	....	....	....	400
Shoshone, Idaho	.15	....	.15	....	.15	....	.16	....	....	....	.14	....	1,000
Simpson, Utah	....	....	....	....	....	....	....	....	....	....	....	....	.....
South Side, Mich.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Sullivan.	.30	.28	.33	.30	.31	....	.35	.34	....	....	.35	.32	3,150
Sutro Tunnel, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Taylor Plumas, Cal	....	....	....	....	....	....	....	....	....	....	....	....	.....
Winthrop, Mich.	....	....	....	....	....	....	....	....	....	....	....	....	.....

*Ex dividend. Boston: Dividend shares sold, 8,431. Non-dividend shares sold, 14,300. Total Boston, 22,731.

COAL STOCKS.

NAME OF COMPANY.	Par val. of sh'rs.	July 14.		July 16.		July 17.		July 18.		July 19.		July 20.		Sales.
		H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Barclay Coal	....	†16	....	†16	....	†16	....	†16	....	†16	....	....	....	
Buck Mt. Coal	....	*4	....	*4	....	*1	....	*4	....	*4	....	....	....	
Ches. & O. RR.	100	....	....	....	....	....	....	....	....	....	....	....	....	
Chic. & Ind. Coal RR.	100	....	....	....	....	....	....	....	....	....	....	....	....	
Do. pref.	100	....	....	....	....	....	....	....	....	....	....	....	....	
Col. & Hocking Coal	100	23½	22	23¾	....	21	....	21¾	21	....	....	21⅞	21	1,300
Col., C. & I	100	....	....	35⅞	34¾	35¼	....	36½	35¼	35½	....	....	....	4,300
Connellsville Gas Coal	....	....	....	....	....	....	....	....	....	....	....	....	....	
Consol. Coal	100	....	....	....	....	....	....	20¼	20¼	....	....	....	....	200
Del. & H. C.	100	113¼	111⅜	113⅛	112⅛	113	112⅝	113¼	112¾	113¼	....	113¼	112½	6,427
D., L. & W. RR.	50	134	132¾	133⅞	132⅝	133¼	132¾	134	133¼	134	133	133⅜	132¾	60,075
Hocking Valley	100	23	22⅝	23¾	23	24	23	24¼	23¾	24	....	24	....	4,481
Hunt. & Broad Top	....	....	....	....	....	....	....	....	....	....	....	....	....	
Do. pref	....	....	....	....	....	....	....	....	....	39½	....	....	....	100
Lehigh C. & N.	50	49½	....	....	....	....	....	49¼	....	49½	49⅜	49¼	....	743
Lehigh Valley RR.	50	52¾	....	53	52⅞	53	52¾	....	....	53	52⅞	53	52⅞	1,952
L. & W. C. & I. Co	....	....	....	....	....	....	....	....	....	....	....	....	....	
Mahoning Coal RR.	100	....	....	....	....	....	....	....	....	....	....	....	....	
Marshall Con. Coal	100	....	....	....	....	....	....	....	....	....	....	....	....	
Maryland Coal	100	....	....	....	....	....	....	....	....	....	....	....	....	
Montauk Coal	50	....	....	....	....	....	....	13	....	....	....	....	....	200
Morris & Essex	100	....	....	....	....	....	....	....	....	....	....	....	....	
New Central Coal	100	....	....	....	....	....	....	141½	....	....	....	....	....	83
N. J. C. RR.	50	83½	83	83½	83	84½	83¼	84½	83⅞	83⅝	83	83¼	82¾	300
N. Y. & S. Coal	100	....	....	....	....	....	....	....	....	....	....	....	....	10,642
N. Y., Susq. & Western	100	9½	8¾	9½	9	9¼	9⅛	9⅝	9¼	....	....	9	....	4,800
Do. pref.	100	31⅝	31¼	31⅜	30⅞	31⅝	31	31¾	31½	31¾	31	31½	31¼	5,020
N. Y. & Perry C. & I.	100	....	....	....	....	....	....	....	....	....	....	....	....	
Norfolk & Western R.R.	100	....	....	17¾	17¼	17¾	17½	18	....	18¼	18	18	....	1,315
Do. pref.	50	49	48½	49¾	49	49⅝	49½	50½	49⅝	50½	49¾	49⅝	49⅜	19,955
Penn. Coal	50	....	....	....	....	....	....	....	....	....	....	....	....	
Penn. Gas Coal	....	†49½	....	†49½	....	†49¼	....	....	....	†49½	....	....	....	
Penn. RR.	50	54⅜	54	54¼	54	54	53⅞	54	....	54⅝	54½	....	....	5,664
Ph. & R. RR.**	50	62⅜	61⅝	62½	61¼	62	61⅛	62⅜	61⅝	62⅝	61½	62	61¼	210,137
Tennessee C. & I. Co.	100	27⅛	27	27⅜	26⅞	27¼	27	29	27	29	28½	28¾	27¾	11,200
Westmoreland Coal	100	†68	....	†68	....	....	....	†68	....	†68	....	....	....	5
Whitebreast Fuel Co.	....	....	....	....	....	....	....	....	....	....	....	....	....	
Wyoming Valley Coal	....	†47	*46½	†47	*46½	†47	*46½	†47	*46½	†46¾	46	....	....	

*Bid. †Asked.
**Of the sales of this stock, 45,586 were in Philadelphia, and 170,551 in New York. Total sales, 354,919.

San Francisco Mining Stock Quotations.

COMPANY.	CLOSING QUOTATIONS. July 13.	July 14.	July 16.	July 17.	July 18.	July 19.
Alpha	....	....	....	....	....	....
Alta	....	1.50	1.50	1.50	1.55	1.50
Belcher	....	....	....	....	....	....
Belle Isle	.65	....	....	....	....	.60
Best & Bel.	3.80	3.80	3.55	3.75	3.70	4.00
Bodie	2.40	2.50	2.15	2.25	2.15	2.20
Bulwer	.85	....	.80	.80	.80	.80
Chollar	2.75	2.75	2 65	2.95	2.85	2.85
C'm'weal'h	....	5.00	4.00	....	....	5.12½
Con. C. & V	9.25	9.25	9.00	9.50	9.37½	9.87½
Con. Pac.	....	....	....	....	....	....
Crown Pt.	4.35	4.15	4.00	4.30	4.20	4.40
Eureka C.	....	....	....	....	....	....
Gould & C.	2.80	2.75	2.60	2.70	2.75	2.85
Grd. Prize	2.40	2.40	2.50	2.25	2.25	2.40
Hale & N.	6.00	5.87½	5.62½	5.62½	5.87½	5.87½
Mexican	3.60	3.50	3.45	3.60	3.40	3.65
Mono	1.50	....	1.35	....	....	1.35
Mt. Diablo	....	....	....	....	....	....
Navajo	1.85	....	1.70	1.60	....	1.85
Nev. Queen	6.25	6.12½	6.00	6.00	6.25	6.75
N. Belle I.	3.60	....	....	3.25	3.25	3.65
Ophir	6.62½	....	6.12½	6.12½	6.12½	6.50
Potosi	2.75	2.65	2.65	2.70	2.80	2.75
Savage	4.05	3.65	3.65	3.65	3.50	3.80
Scorpion	....	....	....	....	....	....
Sierra Nev.	3.30	3.10	3.05	3.15	3.10	3.30
Sutro Tun.	....	....	....	....	....	....
Tip Top	....	....	....	....	....	....
Union Con.	3.30	3.30	3.30	....	3.30	3.50
Utah	1.35	1.35	1.35	1.35	1.30	1.30
Yellow Jkt.	4.40	4.35	4.10	4.30	4.45	4.25

Refuse bone black is $18@$19 per ton guaranteed over 70 per cent bone phosphate; dissolved bone black is 90c. per unit, and acid phosphate 75c. per unit for available phosphoric acid.

High grade sulphate of potash is firm at 2·20 on basis of 90 per cent sulphate of potash.

Double manure salt is in very moderate demand, with no change in quotations, which are firm at 1·05 on basis of 48 per cent.

Muriate of potash is quiet, but very firm. We note no change in quotations, which are firmly held at 1·80c.

Kainit continues firm and in good demand; for small quantities ex store $11.50 is realized, and for shipment $9.50@$10 per ton, as to quantity, etc.

Brimstone is very quiet, and the demand light. Goods on the spot are offering at $21.50 per ton, to arrive $20.75, but we hear of little doing at these figures. Thirds are 75c. per ton less than above figures on seconds.

Nitrate of soda is very quiet. Goods are selling ex vessel at 2c. and ex store at 2@2·05c., according to quantity, etc. Futures are steady, but dull. We quote 1·97½@2c. as fair figures.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, July 20.

The iron market is without special feature. In pig iron the consumption continues rather light, but with a better outlook for the remainder of the year. Prices remain unchanged, at about $18 for standard No. 1 foundry, but good irons can be purchased at $17.50@$17.75 in this harbor.

The reduction in the demand for pipes and for building purposes and the heavy decline in the make of steel rails this year have been the chief causes for the reduction in the demand for pig iron. The general manufacturing demand has been fairly good all the year, for the industrial activity of the country has not been checked to any appreciable extent, as is convincingly demonstrated by the enormous consumption of coal—greater even than last year—and the large railroad freight business.

There are some exceptionally low quotations made for Southern foundry irons, which are disquieting some of the Lehigh furnaces, but the cost of production on the Lehigh is also being reduced to a point where the South can not seriously affect its trade.

The Thomas Iron Company, under the administration of Mr. B. G. Clarke, shows how simple a reform as buying ore by the unit of iron, instead of by the ton, and thus getting a higher grade stock, has reduced the fuel cost per ton of pig iron more than $1.10, and the cost of flux about 30 cents per ton of pig. When due weight is given to the increased output of the furnace and to the reduction in the labor per ton of iron produced, and the improvement in the average grades of iron, it is possible that the total advantage may exceed $2.50 per ton of pig. This is one of the examples of business ability which form such an important feature in the success of this great corporation.

Scotch Pig.—Private advices this afternoon announce an advance in Glasgow prices, Coltness being quoted 48s.; Dalmellington, 40s. 6d.; Clyde, 43s. 6d.; Garthsherrie, 44s.; freights, 4@5s.

The prices in this market remain as in our regular quotations given on another page. The prices here are down to or below the cost of importation, so there is "nothing in the business."

In the bar iron market the business offers no new feature, 1·55@1·65c. for Common and 1¾c. for Refined.

In structual iron the demand is quiet owing to the moderate amount of building and railroad work, but the outlook for the future is improving.

Steel Rails.—We hear of no important contracts having been made during the week, but there is a decidedly better feeling in the market than we have noticed for some time past. Politics are less thought of, and, in fact, the expression is quite common that it makes very little difference which party wins, business will improve and be good. The mileage of new railroad that will be built this year will probably amount to 7500 or 8000 rails, though the demand for rails has as yet been rather light. Up to July 1st the sales of our rail mills amounted to 934,987 tons, as against 1,695,055 tons in the corresponding months in 1887. Deliveries this year have been 585,558 tons, as against 907,351 tons last year to corresponding date.

Prices remain nominally $30 at Eastern mills.

In old material there is nothing worthy of note. Prices for all kinds of iron will be found in our table of "current prices."

Our Pittsburg letter announces the end of the lockout and the dissolution of the Western Iron Association.

Louisville. July 17.

[Special report by HALL BROTHERS & Co.]

There has been an active buying movement during the past week, and various orders for large and small quantities for immediate and future delivery have been booked. No sales have been made at prices below last week's transactions, the market having fully held its own. Negotiations are still pending for other large quantities, and the indications are they will be consummated during the next few days. The difference noticeable for some time past between the furnace men still exists. Some are unwilling to sell for delivery beyond the first of the year, while others accept orders for more extended shipment.

Quotations for cash f.o.b. cars at Louisville will be found in our weekly register of prices.

Philadelphia. July 19.

[From our Special Correspondent.]

The events in the iron market for the past few days possess considerable interest to those large consumers who have allowed stocks to run down very low. Quite a number of important transactions have been quietly closed since Monday, but both buyers and sellers are extremely reticent concerning all the dealings. Some sales have been made of steel rails. Several good lots of plate iron have been put in contract. Four or five considerable orders in angles, bars and channels have also been placed. Wrought iron consumers are also stronger this week. Nails promise to improve, but up to this hour sales are in small lots. Only two or three moderate transactions are reported this week in Bessemer and Spiegelsen. There were several inquiries this week for muck iron, but manufacturers are holding their figures a little too high to suit. The outlook is that there will be sharp and bitter competition right straight along through the season in all kinds of crude and finished iron. This does not preclude the possibility of stronger prices in all specialties, especially in merchant steel and agricultural iron. Within a day or two several large inquiries have been received. Wire rods will be in active request for the next thirty days. Quotations will be found in our column of current prices.

Pittsburg. July 19.

[From our Special Correspondent.]

Good news and true! The iron market presents a very healthy appearance. With the close of last week bottom prices was reached. The present week opened a new set of books with an advance in prices and a stronger tone prevailing in Bessemer and gray forge pig and foundry descriptions. Last week's prices have been laid away for the present. Sellers demand more money and have obtained the same. There will be no more iron sold below the cost of production; that day has departed, for which there will be no regret. The fact is pig-iron has been fully one dollar per ton below what it ought to be. In visiting leading dealers the improvement in the tone and strength of the market could be readily perceived. The boom so long expected is now on the way and will soon be on hand to gladden the hearts of furnace men and others, for which many thanks.

We learn from reliable authority that stocks of standard brands of gray mill and Bessemer pig are in very light supply in the Shenango and Mahoning valleys, as well as at other points; in fact, to come to the point, the iron will have to be made before large orders can be filled. The leading iron men, those who have kept faith with their obligations, are not in the best of humor with those of their members who made promises only to break them. The Western Iron Association has dissolved, after passing the following: *Resolved*, that the conference committee of manufacturers be dissolved and that all members of the Association of Manufacturers of Iron, Steel and Nails who have not signed the Amalgamated scale be absolved from all pledges, written or otherwise, and are authorized to act in their individual capacity regarding the starting of their works. The mills that started up with non-union men claim to be getting along all right and show no signs of weakening. As we remarked last week, the feeling is daily becoming stronger to do their own hiring and manage their own business and pay good wages. The following sales tells a remarkably good story:

Coal and Coke Smelted Lake Ore.	
1000 Tons Bessemer	17.00 cash.
1000 Tons Bessemer	17.00 cash.
1000 Tons Bessemer	17.25 cash.
500 Tons Bessemer	17.25 cash.
500 Tons Gray Forge	14.25 cash.
1000 Tons Gray Forge	14.25 cash.
1000 Tons Gray Forge	14.25 cash.
500 Tons Gray Forge	14.25 cash.
300 Tons No. 2 Foundry	16 00 cash.
100 Tons No. 1 Foundry	17.50 cash.
50 Tons Bessemer	17.50 cash.
50 Tons No. 3 Foundry	15.25 cash.
25 Tons Open Mill	14.50 cash.
Charcoal.	
25 Tons Cold Blast	27.00 cash.
25 Tons No. 2 Foundry	23.50 cash.
Coke, Native Ore.	
1000 Tons Gray Forge	14 50 cash.
1000 Tons Gray Forge	14.50 cash.
750 Tons Gray Forge	14.50 cash.
500 Tons Gray Forge	14 50 cash.
200 Tons Gray Forge	14.25 cash.
97 Tons Mottled and White	13.50 cash.
25 Tons No. 2 Foundry	16.00 cash.
50 Tons Silvery	16.50 cash.
Steel Slabs and Billets.	
1000 Tons Billets	28.50 cash
1000 Tons Billets	28.50 cash
500 Tons Nail Slabs	28.00 cash.
1000 Tons Nail Slabs	28.50 cash.
500 Tons Nail Slabs	28.25 cash.
Muck Bar.	
2000 Tons Neutral, August	26 25 cash.
1000 Tons July	26.50 cash.
Old Iron Rails.	
550 Tons American Ts	21.75 cash.

FINANCIAL.

NEW YORK, Friday Evening, July 20.

Though the mining stock market shows little animation, there is a very decided improvement in the tone of the financial market, the impression being general that an improvement in the stock market is near at hand, and it may be expected that any marked improvement in other stocks will extend to the mining list also.

There is great need of it, and we trust it will come as the rain from heaven, only we would like to see its blessings confined to "the just." That, however, might make it rather lonely on the Exchange.

Sutro Tunnel shows transactions amounting to 10,600 shares, at prices ranging from 8c. to 11c. Consolidated California & Virginia was active, and advanced from $9.50 to $10.50. The other Comstock shares show the usual transactions.

Barcelona was neglected, selling at from $1 to $1.10.

Belle Isle was dealt in at 62c.; Navajo at from $1.75 to $1.80, and North Belle Isle declined from $3.75 to $3.15, advancing again to day to $3.50.

El Cristo opened at $1.20 and later in the week declined to $1.10. Sales were made to-day at $1.15.

Silver King attracted considerable attention at prices ranging from $1.00 to $1.25, and $1.50 to $1.60 for assessment paid.

Proustite declined from $1.10 to $1.00, and Shoshone was active at 12 to 14c.

Sutter Creek has so far attracted but little attention, and remained unchanged at $1.10. Amador showed a downward tendency, going from $2.40@$2.15. Middle Bar was steady at 44@45c.; Astoria at 24c., and Hollywood at from 38@40c.

Quicksilver Preferred advanced from $38@$41.

Brunswick was quiet at 14c.

Plymouth Consolidated shows sales of 340 shares in the beginning of the week at from $8.13@$8.25.

The transactions in the Bodie stocks continue to be small. Bodie Consolidated shows a few sales at $2.10. Bulwer at from 78 to 83, and Standard at $11.50.

The stock of the Colorado Central Consolidated Mining Company has been listed on the Amsterdam Stock Exchange on the application of the Holland stockholders. Very little is doing in the stock in this market. Since the collapse in Security the stock is neglected. The promoters will no doubt bring it out again in some "new dress." Small Hopes was dealt in to the extent of 100 shares at $1.10. Robinson Consolidated shows some business at from 74@80c. Plutus appeared on the list after a long absence at $1 per share, and advanced to $1.25. Little Chief ruled at 23@24c, Chrysolite at 41c., Silver Cord at 30c., Monitor at 13c., Cashier at 6c.

Ontario has declared its usual monthly dividend of $75,000, and was quite active at from $31 to $31.50. Horn-Silver shows a sale at 80c.

Rappahannock was firm all week at 11c., excepting on Tuesday, when it sold at 10c.

Father de Smet shows transactions of 1300 shares at prices ranging from 44 to 47c. Deadwood at from $1.75 to $1.85. Homestake at $11.

Financial Statements.

The following mining companies report having had cash on hand July 1st, 1888, in addition to the list published in our last issue: Overman, $26,246 14; Caledonia, $905.02: Scorpion, $9000.

Meetings.

East New York Iron Company, Ishpeming, Mich., August 8th, at nine o'clock A. M.

Kilworth Mining Company, Ishpeming, Mich., August 6th, at nine o'clock A. M. Special meeting for the purpose of levying an assessment on the capital stock of the company.

Mineral Range Iron Mining Company, Grand Pacific Hotel, Chicago, Ill., July 25th, at 2 o'clock P M. Special meeting for the purpose of considering the proposal of disposing of a portion of the real estate of said company.

Pascoe Iron Company, Marquette, Mich., August 21st, at 10 o'clock A. M. Special meeting for the purpose of considering the proposal to sell or surrender the mining leases now held by said company, from the Atlantic Iron Company and Marquette, Houghton & Ontonagon Railroad Company.

Peninsula Copper Mining Company, No. 34 Wall street, New York City, August 8th, at eleven o'clock A.M.

Red Chief Gold Mining Company, at the office of Messrs. Traphagen & Beekman, No. 76 Montgomery street, Jersey City, N. J., August 7th, at three o'clock P.M.

Tipton Coal and Coke Company, No. 333 Walnut street, Philadelphia, Pa., August 8th. Special meeting to act on a proposition to increase the indebtedness of the company in order to perform a subsisting contract, and if approved to make such orders in the premises as may be requisite to carry the same into effect.

Dividends.

Columbia Oil Company, of Pennsylvania, has declared a dividend, No. 61, of two per cent on the capital stock, payable on the 16th inst. at Pittsburgh, Pa.

Daly Mining Company, of Utah, has declared a dividend of $37,500, payable at the office of Messrs. Lounsbery & Co., Mills Building, New York City, on the 31st inst.

Fulton Coal Company, of Pennsylvania, has declared a dividend of 5 per cent, payable July 18th, at the company's office, 227 South Fourth Street, Philadelphia.

Homestake Mining Company, of Dakota, has declared a dividend of $25,000, payable by Messrs. Lounsbery & Co., Mills Building, New York City, on the 25th inst.

Idaho Mining Company, of California, paid a dividend this month at the rate of $10 per share, amounting to $31,000.

Mount Diablo Mining Company, of Nevada, has declared a dividend of 20 cents per share.

Ontario Silver Mining Company, of Utah, has declared a dividend of $75,000, payable at Messrs.